

RESTRUCTURING THE MEDICAL EVACUATION
BATTALION

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE
General Studies

by

Scott B. Avery, MAJ, USA
B. A., University of Washington, Seattle, Washington, 1988

Fort Leavenworth, Kansas
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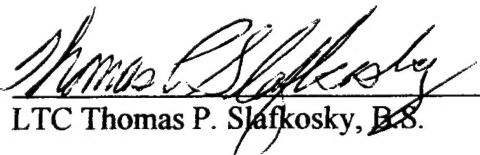
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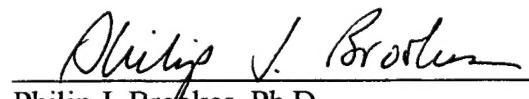
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ABSTRACT

RESTRUCTURING THE MEDICAL EVACUATION BATTALION, by MAJ Scott B. Avery, 100 pages.

This thesis investigates whether the Army Medical Department (AMEDD) should restructure the medical evacuation battalion. The structure chosen allows the AMEDD to deploy, train, and command medical assets during peace and war. Whether the AMEDD should restructure is a topic of debate as is the most advantageous assignment of medical evacuation units.

Medical evacuation units are currently assigned to the corps with their command and control coming from the medical evacuation battalion. The study investigates how to form battalions and the implications of regional command and control. Also considered is the duplication in the logistical assets inherent to regionally commanded and separately deployable units.

This study compares three organizational structures using the force integration functional areas (structuring, equipping, training, manning, sustaining, deploying, stationing, funding, and readiness). The study promotes restructuring the medical evacuation battalion using an Aviation Restructure Initiative (ARI) model and stationing units together with the battalion headquarters. Restructuring the battalion coupled with stationing changes facilitated by the use of the multicomponent unit concept enhances the evacuation capability without increasing the total number of personnel. A change to this structure will allow for trained, cohesive, modular units better able to meet future demands throughout the spectrum of conflict.

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LIST OF ABBREVIATIONS

A2C2	Army Airspace Command and Control
AA	Air Ambulance
ACFT	Aircraft
ABN	Airborne
AC	Active Component
ACR	Armored Cavalry Regiment
AF	Airfield
ALO	Authorized Level of Organization
AM	Amplitude modulated (AM High frequency radio—long-distance communications)
AMB	Ambulance
AMEDD	Army Medical Department
AO	Area of Operations
AOE	Army of Excellence
AOR	Area(s) of Responsibility
AR	Army Regulation
ARI	Aviation Restructure Initiative
ASLT:	Assault
ASMT	Area Support MEDEVAC Team
AVIM	Aviation Intermediate Maintenance
AVN:	Aviation
AVUM	Aviation Unit Maintenance

BAS	Battalion Aid Station
BDE	Brigade
BMO	Battalion Motor Officer
BN	Battalion
BSA:	Brigade Support Area
C2	Command and Control
C4I	Command, Control, Communications, Computers, and Intelligence
CDR	Commander
CENTCOM	United States Central Command
CHS	Combat Health Support.
CL III	Class 3 Supplies (Petroleum, Oils and Lubricants)
CMDAB	Command Aviation Battalion
Co.	Company
COA	Course of Action
COMPO	Component either COMPO 1 (active duty), COMPO 2 (National Guard), or COMPO 3 (Army Reserves)
CONUS	Continental United States
CSA	Chief of Staff of the Army
CSH	Combat Support Hospital
CSS	Combat Service Support.
DA	Department of the Army
DAMPL	Department of the Army Master Priorities List
DD	Department of Defense

DET	Detachment
DFAC	Dining Facility
DIV	Division
DOD	Department of Defense
DS	Direct Support
DSA	Division Support Area
EAC	Echelons Above Corps
EVAC	Evacuation
FIFA	Force Integration Functional Area
FLT	Flight
FOC	Future Operational Capability
FM	Field Manual; Frequency Modulated
FSB	Forward Support Battalion
FSMC	Forward Support Medical Company
FSMT	Forward Support MEDEVAC Team
FST	Forward Surgical Team
GA	Ground Ambulance, Georgia
GND	Ground
GRP	Group
GS	General Support
HEMTT	Heavy Expanded Tactical Truck
HF	High Frequency
HHC	Headquarters and Headquarters Company

HHD	Headquarters and Headquarters Detachment
HQ	Headquarters
IBCT	Intermediate Brigade Combat Team
ISB	Intermediate Staging Base
lbs.	Pounds
LOC	Lines of Communication
Maint.	Maintenance
MASF	Mobile Aeromedical Staging Facility
MASH	Mobile Army Surgical Hospital
MECH	Mechanized
METL	Mission Essential Task List
MDPLTGA	Medical Platoon Ground Ambulance
Med.	Medical
MEDCOAA	Medical Company Air Ambulance
MEDCOGA	Medical Company Ground Ambulance
MEDCOM	Medical Command
MEDEVAC	Aeromedical Evacuation
MEST	Medical Evacuation Support Team
MF2K	Medical Force 2000
MOS	Military Occupational Specialty (enlisted personnel)
MPL	Mandatory Parts List
MRI	Medical Reengineering Initiative

MSB	Main Support Battalion
MSC	Medical Service Corps
MTF	Medical Treatment Facility.
MTOE	Modified Table of Organization and Equipment
MTW	Major Theater of War
NCA	National Command Authorities
NMC	Non Mission Capable
OCONUS	Outside the Continental United States
Ops.	Operations
OPTEMPO	Operational Tempo
OR	Operational Readiness
PERSTEMPO	Personnel Tempo
PLL	Prescribed Load List
Plt.	Platoon
POL	Petroleum, Oils, and Lubricants
RC	Reserve Component
RSOI	Reception, Staging and Onward Integration
S1	Adjutant (US Army)
S2	Intelligence Officer (US Army)
S3	Operations and Training Officer (US Army)
S4	Supply Officer (US Army)
SASO	Stability and Support Operations
Sec	Section

SFOR	Stability Forces, Bosnia-Herzegovina
SINCGARS	Single-Channel Ground and Airborne Radio System
Spt.	Support
Surg.	Surgeon
TDA	Table of Distribution and Allowances
TF	Task Force
TM	Team, Technical Manual
TO	Theater of Operations.
TOC	Tactical Operations Center
TOE	Table(s) of Organization and Equipment
TRADOC	United States Army Training and Doctrine Command
TPP	Tactic, Techniques and Procedures
UH	Utility helicopter
UIC	Unit Identification Code
US	United States
USA	United States Army
USFK	United States Forces Korea

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CHAPTER ONE

INTRODUCTION

History of Medical Evacuation

Throughout the history of modern warfare, armies have waged war and attempted to perfect the technique of killing the opponent on the battlefield. The single greatest warfighting advancement in the twentieth century has been the success of military medicine in saving wounded soldiers in combat. Advances in antibiotics, enlightenment in the disease process and evolving field sanitation procedures, intravenous therapy, and the advent and employment of helicopter evacuation on the battlefield are a few of the medical advancements during this century. Given the clinical medical advances, the ability to transport a critically injured soldier to lifesaving care within the "golden hour" advanced to the point that the death rate in hospitals during the Vietnam Conflict actually increased. This was due to the fact that mortally wounded soldiers were rapidly transported to hospitals before they expired.

The first documented tactical use of aeromedical evacuation was in 1871. At this time, Paris was under siege by the Germans, and the French used balloons to evacuate casualties and high-ranking civilians from the city.¹ Balloons obviously have tactical limitations, such as wind direction, vulnerability to ground fire, and their speed, so the use of balloons as tactical evacuation platforms was not embraced by the military community. The first helicopter (formerly known as autogiros) flight by the Germans in 1936 was the birth of a new generation of technology and air evacuation doctrine.

Although not a major factor in World War II, the first U.S. helicopter evacuation occurred with the evacuation of patients from Burma to India during World War II. In

1943, the Army Surgeon had seen the utility of Igor Sikorsky's successful flight tests and planned to incorporate this new mode of evacuation into Army doctrine. The military did not have a large inventory of helicopters, and the ones they did have were unreliable and underpowered. After the first helicopter evacuation, peace broke out in the European and Pacific theaters. This coupled with the Air Force departure from the War Department in 1947 stifled the Army Surgeon's intentions of incorporating helicopter evacuation into Army doctrine.

After the Air Force departed from the War Department, the National Security Act of 1947, the Army was left with only a couple hundred light planes and a few helicopters.² The next few years of peace saw military demobilization, and the doctrine beginning to develop around the Pentomic Division. Divisions were small and designed to fight on a nuclear battlefield. Much of the military funding went to the Navy and Air Force, as national defense once again became the focus of the military. The thought, which was proven wrong by the middle of 1950, was that the U.S. would not be involved in a protracted nonnuclear land war. The war in Korea was just that. At the onset of the Korean War, the U.S. Army was ill prepared to fight a land war and the National Security Act of 1947 had left the Army with only a few airplanes and seventy-four H-13 helicopters. Some of which would be put to use in the role of aeromedical evacuation.

The Air Force was the first to employ air rescue squadrons on the Korean peninsula. They used H-5 helicopters outfitted with litter pods. Finally, on 22 November, the Army received its first aeromedical detachment of four H-13 Sioux helicopters equipped with external litter pods for patient evacuation. The unit was the second Helicopter Detachment and was attached to the 8055th MASH and the USFK

Surgeon.³ H-13s were limited to between 200-400 pounds of useful load. In fact, during many missions in Korea during the summer with high-density altitude, pilots would have to burn off fuel prior to takeoff. Despite its limitations, the H-13s were credited with saving hundreds of lives during the Korean War, and a tradition and new technique of evacuating patients was born into the Army.

Even though they were underpowered, unable to fly in instrument conditions, and had a litter system that exposed the patient to the elements, the helicopters left their mark during the Korean War. Two more helicopter detachments arrived in January of 1951 and the three detachments combined to evacuate nearly 2,000 patients between January and June of 1951. Before the end of the Korean War, the Army had developed a table of organization and equipment (TOE) for the air ambulance detachment that included five helicopters, seven pilots and the support personnel to complete the unit. Notably, the unit did not include any medical personnel because there was no way to provide enroute care on the H-13. The unit was, however, to be part of the medical department, and to be dedicated to transporting patients.

The revolution had begun. Aeromedical evacuation units in the Korean War had proven their utility by saving countless lives. A medical evacuation force structure was beginning to take shape. In 1953 the armistice was signed ending the combat phase of the Korean War, and during the period between 1953 and 1961, the Army Medical Department continued to explore the possibilities of aeromedical evacuation. Political infighting between the Army and the Air Force again caused problems not only for the Army Medical department but also for Army Aviation as the Army began to explore the possibilities of helicopter air mobility doctrine.

Not much occurred in the medical evacuation revolution between 1953 and 1962; however, as the U.S. involvement in Indochina increased, so did the interest in aeromedical evacuation. Just as in Korea, the terrain in Vietnam favored air evacuation. During the inter war years, a new utility helicopter was acquired by the Army and the medical department. The UH-1 (Huey) would be the workhorse of the Vietnam Conflict. In 1962, the 57th Medical Detachment deployed for duty in Vietnam. This unit "The Original Dustoff" remained in Southeast Asia for eleven years. Aeromedical evacuation (MEDEVAC) units were heralded as a great success in the Vietnam Conflict.

The UH-1V brought greater capabilities for MEDEVAC units. Where the H-13 used in the Korean War had a useful load of only 200-400 pounds, the Huey could carry between 1,000 and 3,000 pounds depending on the configuration and the density altitude. Additionally, the helicopter was configured with internal litters that kept the patient out of the elements as he was transported to the medical treatment facility. Since the patient was transported inside the helicopter, the medical department also included corpsmen (flight medics) in the crew of the helicopter. This allowed for patient monitoring and enroute care. The communication problem that had plagued H-13 pilots (limited to hand-and-arm signals) had been solved by a communications package being included in the helicopter. Overall, the technological advances born out of the Korean War had set the medical evacuation system up for success technologically by the beginning of the Vietnam Conflict.

Structurally, the TOE that was developed (Medical Detachment) had not changed much by the beginning of the conflict in 1962. The detachment had grown with the addition of flight medics to go along with the capabilities that the UH-1 provided but the

basic structure remained the same. The 57th Medical Detachment, helicopter ambulance, deployed to Southeast Asia with five Hueys; but as the fighting grew more intense in Vietnam, the MEDEVAC structure evolved. The detachment grew to six aircraft, a twelve aircraft platoon was included in the TOE of the 1st Cavalry Division (Air Mobile), the platoon then grew into a company with fifteen aircraft and finally, the Army Medical Department organized evacuation assets into battalions with several remotely located companies and detachments. By the end of the Vietnam Conflict, all the components of the present-day medical evacuation structure were in existence.

Medical evacuation technology structure and doctrine was revolutionized between 1950 and 1974. Notwithstanding technological advances, nearly all of the structure and doctrine changes were during times of conflict motivated by necessity. Peacetime development was slow and often hindered specifically by military draw down, a tendency toward isolationism after a major conflict and the political infighting between the Army and Air Force over roles and missions. The period between 1950 and 1974 was marked by over sixteen years of conflict. The advent of aeromedical evacuation and the innovations of the service members who served in the DUSTOFF units developed a MEDEVAC system that became so efficient a soldier injured anywhere in Vietnam was mere minutes from the hospital, providing communications and weather cooperated. Today, after twenty-six years of relative peace, the revolution is over. Although the U.S. Army has acquired a new helicopter for use in aeromedical evacuation, the structure has not changed significantly since 1974.

Problem Definition

Medical evacuation force structure supports the current Army doctrine but has not changed in its conceptual base over the last ten years. The structure does not allow for autonomous sub-units below the fifteen-aircraft company to be deployed to support anything less than a major theater of war (MTW). Units regularly deploy portions of the companies; however, some units must provide one of the elements with the command, logistics and planning support for it to function. In the age of ever-increasing global commitments for the United States Armed Forces, a restructuring of the Medical Evacuation Battalion is warranted.

The Medical Company, Ground Ambulance (GA) and the Medical Company, Air Ambulance (AA) accomplish the mission of medical evacuation within the corps area. The Medical Evacuation Battalion provides command and control (C2) for two to five of these separately deployable companies. These companies are self-sufficient; however, they rarely deploy as a company. The companies are employed across the battlefield as platoons (GA) and Forward Support MEDEVAC Teams (FSMT). These elements rarely have the C2 assets available to complete their missions and integrate their operational capabilities back into the Medical Evacuation Battalion TOC to give the evacuation commander an accurate picture of the battlefield. The issue is the number of liaison elements and the number of communication assets and the sheer distances involved in the command and control of all medical evacuation assets in the corps with one battalion headquarters. If the battalion were to operate within the division area with the proposed force structure, the battalion commander could better support the maneuver commander. During combat operations, the teams/platoons operate great distances from their parent

organizations. Given the inherent flexibility of aviation operations, accurate and timely information flow to the evacuation headquarters can save lives on the battlefield. In this case; however, the evacuation effort is thwarted by a lack of continuity on the battlefield. A lack of communications and unity of effort specifically below the division level fragment the evacuation effort between ground and air. Wasted assets and critical time usually results in high died-of-wounds rate and a piecemeal evacuation effort within the theater of operations as documented in many lessons learned at the Army Training Centers. Additionally, the geopolitical situation has shifted to a higher likelihood of stability and support operations (SASO). Elements of the U.S. Military participate in SASO missions more frequently now than ever before in history. These missions require tailored packages to support the mission at hand and modular units capable of deploying, training and supporting at multiple locations.

Medical evacuation units (companies) are designed to deploy as fifteen aircraft companies to a theater of operations. They do not have separately deployable modules below the company level that include command, planning, and logistical capabilities. Supporting SASO missions rarely requires an entire air or ground company. Since these companies do not have modular support infrastructure built into their base TOEs; they have great difficulty deploying pieces of their organizations in support of SASO missions. The units support the SASO missions and their home-station requirements simultaneously resulting in serious risk assumption at both ends of the lines-of-communications. The C2 and sustainment structure does not support multiple separate areas of responsibility (AORs) for each company. Additionally, the structure of the medical evacuation battalion can not fill the gap in the sustainment portion of the mission

because it is only a C2 headquarters of fifty-five personnel commanding from three to seven companies. The battalion headquarters (HQ) can assist the costationed companies with the C2 of the rear detachment forces; however, remotely stationed companies must rely on the Army garrison for this support.

The number of deployments has grown exponentially over the last ten years. Every mission commander wants MEDEVAC helicopters to support his operation. These operations do not generally require entire fifteen ship MEDEVAC companies. Currently, within the XVIII Airborne Corps, the 56th Medical Evacuation Battalion consists of two fifteen-ship MEDEVAC companies and one ground ambulance company consisting of forty ground ambulances. Within the next twelve months, the battalion will support: Bright Star in Egypt, Intrinsic Action in Saudi Arabia, and two air ambulance company rotations in-a-row to support Stability Force (SFOR) in Bosnia-Herzegovina. The battalion can not support this mission load in its current configuration. The problem is with the back-to-back SFOR rotations and a lack of deployable modules within the battalion to rotate through the deployment cycle.

The requirement in Bosnia is for approximately nine aircraft and a command and control element as part of the forces deployed in support of Operation Joint Guard. The companies must deploy nearly all of their support assets, maintenance C2 etc., to support the mission. Additionally, due to the constant turnover of aviators and the mission training required, the units usually deploy with ten of thirteen operational aircrews and about 90 percent of their support structure. This leaves the rear detachment elements with no C2; maintenance or sustainment resources at home station. If the battalion HQ is geographically located to assist in the C2 of the rear detachment, then there is a viable

solution for the C2 problem; however, the sustainment issues remain. At this point, the sister company within the battalion can cover XVIII Airborne Corps requirements for the contingency forces and still cover the installation requirements at Fort Bragg, North Carolina and Fort Benning, Georgia. During the deployment cycle for SFOR, the unit must stand down, go through a training period before deployment, deploy into theater, perform all reception, staging and onward integration (RSOI) functions and be validated in theater prior to mission assumption. The entire deployment process takes nearly three months before the unit is prepared to assume the mission in Bosnia. This hypothetical time-line illustrates the problem using companies A and B deploying to Bosnia. Table 1 illustrates that during the period between September and January (five months) both companies in the battalion are committed to the SFOR mission. The flexibility left to the XVIII Airborne Corps Commander is completely gone. During three of the five months, neither company is available to the commander. One company is in Bosnia and the other is enroute to Bosnia.

Table 1. Two Company Deployment and Support Calendar

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
A	Prep	Deploy			Support				Redeploy	Recover								
B							Prep	Deploy		Support			Redeploy		Recover			

The composition of each company allows it to separately deploy. Each company possesses the C2 and sustainment assets to support itself within the theater support structure. Theoretically, these companies could be combined to create organizations capable of the C2 and sustainment for both air and ground evacuation missions. These

organizations must be flexible enough to support multiple distinct missions simultaneously. In order to create the required flexibility, this reorganization should occur at the battalion level. Is it possible to combine the Medical Company (AA), Medical Company (GA) and the Medical Evacuation Battalion Headquarters to form a Medical Evacuation Battalion consisting of twenty-four air ambulances and twenty-four ground ambulances? If it were possible, every eight existing MEDEVAC companies would yield fifteen separately deployable modules to support wartime requirements as well as worldwide contingencies. Using the XVIII Airborne corps example, it is possible to examine how this battalion would add flexibility for the commander. The battalion would consist of three eight-ship air ambulance and one twenty-four ground ambulance companies to support worldwide contingencies. Although much research is required to determine the feasibility of accomplishing this, one solution is listed below:

The active component (AC) and reserve component (RC) units in the proposed structure are applying the multicomponent concept to the Medical Evacuation Battalion. This is not a new concept within the separately deployable units today but this application is a new for medical evacuation units.

Applying this force structure to the previous problem, the researcher used a hypothetical battalion at Fort Bragg to see the impact of a continuous deployment cycle on a battalion that has three modules to train, support and deploy. This battalion has three companies. Companies A, B, and C are available for the battalion commander. Throughout the entire time period, the XVIII Airborne Corps has C Company available to support the 82nd Airborne Division (ABN). Additionally, he has companies at Fort Stewart to support the 3d Infantry Division (ID). One can easily see that the corps

commander is given much more flexibility to support multiple contingencies with a comparable amount of resources. Table 2 illustrates the three-company deployment/support calendar. There are many issues with the proposed force structure that the researcher will address later in the thesis.

Table 2. Three Company Deployment and Support Calendar

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
A	Prep	Deploy		Support				Redeploy	Recover									
B							Prep	Deploy		Support				Redeploy	Recover			
C																		

Understanding that medical evacuation structure has not significantly changed since the Vietnam Conflict despite technological and doctrinal changes throughout the rest of the Army, the author must determine if the AMEDD should change the medical evacuation structure. The current operational tempo (OPTEMPO) is one reason to evaluate the current situation and determine if change is warranted. During the period between 1990 and 2000, Army deployments have increased 300 percent since the period between 1950 and 1990.⁴ These deployment rates coupled with a perception of a zero-defect Army have caused an attrition rate among captains as high as 12 percent. Recruitment among all four services is at a low point. The services are not meeting their recruitment or retention goals. The onus is on all leaders in the military to evaluate how they are conducting operations and determine if and how the Army can change the way it does business. One of these changes might be to restructure the Medical Evacuation Battalion.

Scope and Delimitation

Due to the scope of the topic, the author limited the research in the areas of actually building a unit and the number of proposed structure solutions. Army Regulation 570-2, Manpower Requirements Criteria, provides guidelines for manning organizations according to the unit equipment density and organizational structure. Rather than applying the regulation, the author used the approved TOEs from Army Aviation units.

Secondly, the author applied to the research was limiting the number of proposed solutions. Since the Aviation Branch restructure under ARI was approved in 1993, there have been few problems with the new force structure. Today, there are some initiatives to increase the size of the battalion and brigade staffs, increase the size of the AVUM companies and to make multifunctional units at some level. The first two issues are a tribute to the success of the structure modification as the tasks of command and control and support are growing within the current structure.

The third initiative, multifunctional units, demonstrates the need for task organized units. If the Aviation Branch were to revert to multifunctional companies, then the increased logistical structure would cause some aviation units to deactivate. If the branch decides to create multifunctional battalions with functional companies, then there will still be some cost in increased AVUM personnel and a substantial one-time repair parts cost. Units must purchase the high-velocity repair parts to maintain on hand.

Regardless of which direction that Aviation Branch pursues, ARI has been a success for the branch. Modular, well-trained units have deployed worldwide to support Army operations. The author thus chose to use the Command Aviation Battalion TOE to

apply to the medical evacuation battalion and compare this new structure to the current evacuation structure.

Another limitation to the research is the actual costs associated with moving units between posts. If the AMEDD were to restructure the medical evacuation battalion, there would be a one-time cost associated with the move. Many of these costs could be offset by the normal attrition in units and change-of-station cycle; however, there would be a substantial cost for change in the stationing of units. The author did not try to determine the costs associated with the moves.

Research Questions

The primary research question for this thesis is: How should the (AMEDD) restructure the Medical Evacuation Battalion? The subordinate questions that relate to this thesis are:

1. Which structure is the most flexible?
2. Which structure is the most sustainable?
3. What is the best structure given the current equipment?
4. What structure is the most deployable?
5. What structure provides the best training opportunities?
6. Which structure provides the most efficient stationing?
7. What is the best structure given the current manning?
8. Which structure is the most cost efficient (funding)?
9. Which structure provides the best readiness opportunities?
10. Which force structure can best support the current and future warfighting commander?

Assumptions

1. The AMEDD will not be able to increase its end-strength in personnel.
2. Any structure solution must use existing evacuation assets (air and ground ambulances).
3. The current OPTEMPO will continue for the foreseeable future.
4. The future force structure must be designed to support two major theaters of war (MTW).
5. The AMEDD has the ability to restructure evacuation assets in all components within fiscal constraints.
6. The Army will retain a warfighting force structure of ten active divisions.
7. The AMEDD will retain the medical evacuation mission for the Army.
8. A battalion structure with collocated subordinate companies is preferable to a battalion with regionally commanded separate companies.

Operational Definitions

Throughout this thesis, the author will use terminology common to the military, Army Aviation, Army force management personnel, and the AMEDD. Many of the terms are familiar to United States Army personnel; however, some terms do require definition.

Joint Vision 2010 and The Army Vision

Joint Vision 2010 and The Army Vision are documents written by the senior leadership of the military to communicate the azimuth that the senior leadership wishes to follow to arrive at the optimum force structure and capabilities in the future. These documents provide broad guidance to arrive at the desired end state. Both of these

documents stress the need for the military of the future to be adaptable, agile, and deployable to meet the future needs of the military.

Intermediate Brigade Combat Team

The most recent modernization and doctrine initiative in the United States Army is the Intermediate Brigade Combat Team (IBCT). The IBCT was initially backed by the Chief of Staff of the Army (CSA), General Eric Shinseki, in 1999. Already, the units are being stationed and manned at Fort Lewis, Washington, even before the final decision on what type of combat vehicle the units will utilize. The concept behind the IBCT is to have an air-deployable mechanized force to improve the force projection capability of the Army.

The Army determined through lessons learned in Desert Storm and the myriad of peacekeeping operations in the 1990s that it was lacking an intermediate force that was quickly deployable. As demonstrated by the deployment of the 82nd Airborne (ABN) Division to Desert Shield in August of 1990, the Army was capable of rapidly deploying light divisions anywhere in the world on short notice. Desert Shield also demonstrated how vulnerable the light forces deployed to the desert of Saudi Arabia were to the Iraqi armored forces poised on the southern Kuwaiti border. Luckily, the belligerents to the north did not attack into the 82nd ABN and the United States was able to build up sufficient armored combat to defend and ultimately attack the Iraqi forces and oust them from Kuwait. The buildup of heavy forces lasted until February of 1991 (six months) before the U.S. forces went on the offensive. The operation demonstrated the lack of a deployable medium force capable of rapid air deployment into a combat theater (armored combat power) or peacekeeping operation (force protection).

The CSA's vision of the IBCT was to develop an intermediate force capable of deploying a mechanized or motorized brigade in ninety-six hours.⁵ The characteristics of this force are to be responsive, deployable, agile, versatile, lethal, survivable, and sustainable.⁶ These characteristics were to be the basis for developing and transforming the Army. The goal was to be able to dominate at any point in the spectrum of operations.

Force XXI

In attempt to leverage the superior technology of the United States Armed Forces, the Army in the early 1990s began to test digital technology and finally fielded the digital division, 4th Infantry Division (MECH), at Fort Hood, Texas. By leveraging technology, specifically information dominance and complete situational awareness, the Army determined that a division could dominate a much larger area of operations with less combat power. The Force XXI division would command 24,000 square kilometers as opposed to an Army of Excellence (AOE) division that operated generally within approximately 10,000 square kilometers. The implications of Force XXI to all CSS units were great. The AMEDD's solution to Force XXI was the Medical Reengineering Initiative.

Medical Reengineering Initiative

In order to respond to the incremental changes in the U.S. military, the Army Medical Department authored the Medical Reengineering Initiative (MRI). MRI studied the change in the national military strategy and the lessons learned from both combat and stability and support operations and changed the doctrine and structure of Army medical units. The tenants of MRI were modular design, maintain low died of wounds rates,

reduce the medical footprint (coupled with increased capability), and provide for improved readiness in RC stationing.⁷

The changes to the Evacuation structure under MRI were minimal. There were some increases in the number of personnel in the medical evacuation battalion headquarters to facilitate split-based operations and twenty-four hour operations. The TOE increased from forty-four to fifty-five personnel.⁸ The ground ambulance company saw the greatest change under MRI. The company was downsized from 40 ground ambulances and 116 personnel to 24 ground ambulances and 77 personnel due to the increased reliance on air evacuation in the Force XXI fight.⁹ Lastly, the air ambulance companies did not see much of a change. The company table of organization and equipment (TOE) strength increased only slightly by adding an additional officer to the flight operations platoon in an attempt to facilitate split-based operations. The MRI changes overall in the evacuation arena were small other than decreasing the number of ground ambulances in the corps.

Medical Force 2000

Through the late 1990s, the AMEDD operated under the Medical Force 2000 (MF2K) force structure. As the twenty-first century progresses, all AMEDD units will convert to the MRI structure. MF2K was based on the Army of Excellence (AOE) doctrine, which is being replaced with Force XXI units and the IBCT.

Multifunctional Units

With the emphasis on deployability and decreased CSS footprint within the theater, the multifunctional unit concept must be explored. Multifunctional units are units that perform more than one type of operation. Within the Aviation Branch, this

might be scout, attack and lift. A multifunctional aviation battalion might have two attack companies, one scout company and a lift company.

Both companies and or battalions are multifunctional or functional. A medical evacuation battalion consisting of ground and air evacuation companies is a multifunctional evacuation battalion consisting of functional companies. The companies are each individually deployable and have only one type of evacuation assets assigned to them.

Aviation Restructure Initiative

In the early 1990s, the Army Aviation Branch saw the need for a force structure change. Aviation units before the Aviation Restructure Initiative (ARI) were primarily functional and multifunctional separate companies (fifteen to twenty-four aircraft) commanded by a major. The units were normally assigned to groups or battalions on a regional basis. Under ARI, functional battalions were formed. Companies, now eight to fifteen aircraft were commanded by a captain and assigned to the battalion. The companies were no longer separately deployable; they required logistical and C2 support from the headquarters and headquarters company (HHC) and aviation unit maintenance (AVUM) support from the AVUM company. The greatest gain of ARI was the ability to task organize companies and battalions to support any mission. Additionally, the battalion staff added the capability for command and control locally as opposed to the earlier regional command structure.

Future Operational Capabilities

The proponent for change within the United States Army is United States Army Training and Doctrine Command (TRADOC). In order to provide guidance to force

management personnel within the Army, TRADOC publishes TRADOC Pamphlet 525-66, *Military Operation, Future Operational Capability*. In chapter 2, the Integrated Future Operational Capabilities (FOC) are listed. Of the fifty-seven listed operational capabilities, twenty-one applies to the medical branch. Medical evacuation is affected by nineteen of these capabilities.

TRADOC also publishes TRADOC Pamphlet 525-50, *Military Operations, Operational Concept for combat Health Support*. Paragraph 3-7, "Medical" describes the patient evacuation capability requirement for the Army. Together, these two references give the force developer the required future operational capability (FOC) for the Army.

Tables of Organization and Equipment

Every military organization has a document spells out the requirements for all like units in both personnel and equipment. This document is the Table of Organization and Equipment (TOE). The TOE gives the basic requirements for a type of unit depending on the authorized level of fill for the organization. TOEs give the basic mission and capabilities statements for all like units in the Army. TOEs are broken down into personnel and equipment authorization sections.

Modified Tables of Organization and Equipment (MTOE)

After a TOE has been approved, then other considerations determine the actual authorizations for a given unit. Other considerations such as geographic location, priority in accordance with the Department of the Army Master Priorities List (DAMPL), and component whether active, Reserve or National Guard are applied to the TOE and the Modified Table of Organization and Equipment (MTOE) is formed. A MTOE is the authorization for a particular unit identified with a unique unit identification code (UIC).

The MTOE gives the unit actual authorizations in personnel and equipment that may be requested through personnel and supply channels.

Multicomponent Units

Some units have multicomponent MTOEs. This means that active, Reserve, and National Guard personnel and equipment are authorized under one unit identification code (UIC). The personnel in the unit, under a single commander may not work together on a daily basis; however, one commander is responsible for the readiness of the entire unit. An example of a multicomponent unit is the 4th ID at Fort Hood. Within the medical platoons in the armor and mechanized infantry battalions in the 4th ID, there are reserve component medical aidmen authorized as the third crewmember in tracked ambulances.

A multicomponent unit can be divided up at any level. Currently there are plans for a multicomponent division in which an active duty division headquarters will command a reserve component division. The multicomponent concept allows for a cadre of active duty soldiers to train as a unit and, when mobilized, the reserve component personnel and equipment join the active personnel and deploy.

In this thesis, a multicomponent battalion will be a battalion that has mixed companies between the active and reserve components. The intent is to maintain unit integrity whenever possible within a single component. This means that a multicomponent evacuation battalion could have one reserve/National Guard company and three active duty companies. Within the HHC and the AVUM companies, unit integrity in the multicomponent battalion could not be maintained. This battalion must have multicomponent personnel in all logistical billets in the battalion.

Split-Based Operations

After deploying a portion of the unit to a remote location, the unit must be able to maintain operations at home station. Units operating at two locations, out of reliable radio range is split-based operations. During true split-based operations, all functions of the parent organization are conducted at both locations.

Limitations

This study has four limitations on the depth of the study. The first limitation was the time available to conduct the study. During the course of the study, the author was a full-time student at the United States Army Command and General Staff Officer College at Fort Leavenworth, Kansas. The demands of the author's studies outside the thesis limited the depth of the study.

The second limitation on this study was funding. The author did not receive any outside funding to complete this research. The study could have benefited from visiting Fort Rucker, Alabama (MEDEVAC Proponency) and Fort Sam Houston, Texas (AMEDD Center and School). Without being able to visit those two locations and interview the action officers for medical evacuation and force development within the AMEDD, the author was forced to rely on published information available either in print or online.

The third limitation on this study was the lack of documentation specifically related to the structure of the medical evacuation battalion. Wealth of research materials exists in the area of medical evacuation tactics, techniques and procedures. Additionally, there are many lessons learned concerning recent deployments of medical evacuation

units. Since the current structure requires a division in the field to deploy battalion, there are not any recent examples of the battalions deploying.

Lastly, the author was had difficulty determining the ability of the AMEDD to restation evacuation units within all components of the Army. This limitation was due largely to the previous three limitations; however, it also involves some political intangibles. In order to determine whether National Guard medical evacuation units could be moved between states, the author would have had to poll the Adjutant Generals (TAG) of all the effected states. Even if the author would have interviewed all the affected TAGs, it is doubtful that a consensus would have emerged.

Summary

This thesis explored the impacts of a proposed force structure solution and how it applies to the active, reserve and National Guard components of the Army. The proposed force structure will be applied to all components and proposed personnel costs and savings will be determined. The author will determine how the differences in the doctrinal structure and actual structures affect any force structure solution. The author will determine if sufficient personnel and equipment exists to man and equip multifunctional medical evacuation battalions throughout the Army. Lastly, the author will provide a model force structure solution for all components throughout the Army.

In order to determine the feasibility of fielding a new medical evacuation battalion, the author used a comparative research approach, comparing the current doctrine and force structure with proposed force structure solutions. Lastly, the author analyzed the different solutions and compared them to the current structure to determine

the optimal medical evacuation battalion structure using the force integration functional areas.

¹ LTC David M. Lam, "From Balloon to Black Hawk, The Army Forward Aeromedical Evacuation Story, Part I: The Origins," *Army Aviation Digest*, June 1981, 41.

² Peter Dorland and James Nanney, *DUSTOFF Army Aeromedical Evacuation in Vietnam* (Washington, DC: Center of Military History, United States Army, 1982), 9.

³ Lam, *Part III: Korea*, 45

⁴ Briefing by The Surgeon General of the Army, Fort Leavenworth, Kansas, 5 Aug 1999.

⁵ U.S. Army Armor Center and School. "Medium Weight Force Initiative Brigade Combat Teams, CSA Planning directive #2." U.S. Army Armor Center, Fort Knox, KY, available from: http://knox-www.army.mil/center/mwfi/planning_dir2.htm. accessed 20 April 2000.

⁶ Ibid.

⁷ AMEDD Center and School "Medical Reengineer Initiative," Briefing by the AMEDD Center and School, Fort Sam Houston, Texas, 14 April 1999, slide 8.

⁸ Ibid., slide 16.

⁹ Ibid., slide 18.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The specific topic of restructuring the Medical Evacuation Battalion is not widely researched; however, there is a wealth of research materials available in the areas of medical evacuation, Army doctrine, emerging doctrine, future doctrine and how the Army changes over time. The bulk of the research and the literature revolves around how the Army evolved to the current evacuation structure, how the Army changes, and the impact of restructuring the Medical Evacuation Battalion.

Historical Review

Medical Evacuation, specifically aeromedical evacuation, began in its present form during the Korean War in the early 1950s. There is a great deal of literature on air mobility and doctrine relating to the use of helicopters in the United States Army during that time. During the interwar years (1953-1961), the aeromedical evacuation structure began to take shape. This period of time found a new concept without the technology to fully exploit the doctrine and there were many debates over whether and how this new doctrine and technology might shape air mobility and medical evacuation. As the United States became involved in the Vietnam conflict, this new doctrine was tested and the era of dominant aeromedical evacuation began. There is a bounty of literature on the Vietnam conflict and how the Army Medical Department (AMEDD) structured and employed aeromedical evacuation assets during that conflict. Many lessons on the structure and employment of aeromedical evacuation assets during this conflict drive the structure and employment of aeromedical evacuation today. During this conflict, all

current medical evacuation unit structures were employed on the battlefield. The Army's experience during the Vietnam conflict remains the basis for the structure and employment of all medical evacuation units today. Since the Vietnam conflict, there have been only minor changes in the structure and employment of medical evacuation units. Literature produced during the period between 1974 and the present is very limited as it relates to medical evacuation and its current doctrine and structure.

Current AMEDD Doctrine

The literature on this subject is limited primarily to current Army doctrine. There are a few articles relating to limitations and strengths of the medical evacuation structure; however, the doctrine and how the AMEDD supports the force is primarily discussed in field manuals (FM). Closely related to the current Army and AMEDD doctrine are the Tables of Organization and Equipment or TOEs that have been designed to support the current doctrine. These TOEs are available over the Internet and provide a departure point for any force structure changes.

FM 8-10, *Health Service Support in a Theater of Operations*, dated 01 March 1991 serves as the base manual for medical operations. Chapter 4, "Patient Evacuation and Medical Regulating," describes the patient evacuation system. Unfortunately, FM 8-10 (Mar 1991) is a bit dated. The manual cites Airland Battle as the basis for how the Army fights and the basis for support of AMEDD units. Since Airland Battle, the Army has changed to Army After Next, Force XXI and now is fielding the Intermediate Brigade Combat Team. Each of these concepts has their own peculiar support demands of the medical evacuation system and deserve medical doctrine supporting the tenants of current warfighting doctrine. FM 8-10 does, however, provide the background for the

current medical system and the tenants for medical care that remains unchanged today.

Additionally, the FM provides the basic framework for medical care on the battlefield.

FM 8-10-6, *Medical Evacuation in a Theater of Operations Tactics, Techniques and Procedures*, the approved final draft dated January 2000 serves as the current AMEDD doctrine for medical evacuation. This FM describes patient evacuation from the point of injury to the communications zone.

Additionally, FM 8-10-26, *Employment of the Medical Company Air Ambulance*, dated 16 February 1999, serves as a guideline for the tactics, techniques and procedures (TTP) used to employ the air ambulance company. This current FM provides a detailed outline of the roles and missions of each key individual in the company. Close analysis of this manual reveals the difficulty for the air ambulance company in conducting split-based operations.

FM 8-42, *Combat Health Support in Stability Operations and Support Operations*, dated 27 October 1997, and FM 8-55, *Planning for Health Service Support*, dated 9 September 1994, provide a background to the AMEDD and how it plans to support operations. FM 8-42 outlines how to plan support for SASO operations, an increasing mission for the U.S. Armed Forces. FM 8-55 is a bit dated but provides a framework for AMEDD operations. It does not take into account emerging doctrine but does address the need for the AMEDD to remain flexible to support across the full spectrum of operations.

Current Aviation Doctrine

An exploration of the current Army Aviation Branch doctrine is crucial to this thesis as it relates to the employment of aviation assets and the current aviation force

structure. FM 1-100, *Army Aviation Operations*, dated 21 February 1997 and FM 1-113, *Utility and Cargo Helicopter Operations*, dated 12 September 1997, provide the current Aviation Branch doctrine. There are additional current articles that provide some insight to the future of the Aviation Branch. These articles describe concepts that have not yet been approved by the branch.

Emerging Army Doctrine

Joint Vision 2010 and the Army Vision

During the process of determining the sufficiency of the current medical evacuation force structure, the impact of emerging Army doctrine was considered. The Army and the armed forces are in a period of change. *Joint Vision 2010* and *The Army Vision* provide the azimuth for the future. The research studied these documents to determine what impacts they may have on future medical evacuation operations.

Force XXI

Experimentation with the digital division and FORCE XXI have produced a wealth of literature on combat service support (CSS) and how to support the Force XXI doctrine. Another concept that both the AMEDD and the Army have instituted is the concept of multicomponent units. Although there is not much empirical data on the effectiveness of multicomponent units, the concept must be explored. Without utilizing this concept any complete restructure of medical evacuation units would not be feasible. The multicomponent concept and Force XXI have been addressed in the Medical Reengineering Initiative (MRI). Literature related to MRI provides a background for change and the AMEDD solution for supporting Force XXI. Additionally, MRI and

Force XXI implement the multicomponent concept in the TOEs of the 4th Infantry Division at Fort Hood, Texas.

The Intermediate Brigade Combat Team

Even more recent than the emergence of Force XXI doctrine and the experimentation with the digital division is the Intermediate Brigade Combat Team concept. The Intermediate Brigade Combat Team is designed to meet the greater strategic mobility requirements of the future Army. The literature on the Intermediate Brigade Combat Team and the doctrine supporting it are all in their speculative stage as the Army determines how to support and deploy units that are in the process of being fielded at Fort Lewis, Washington. This concept is a response by the Chief-of-Staff of the Army to *Joint Vision 2010* (JV 2010). JV 2010 provides a conceptual, capabilities based, approach to designing joint military forces of the future. In studying this document, one can determine the future military requirements from the Joint Chiefs of Staff perspective.

Human Factors and Personnel Tempo

Probably the most difficult factor to objectively analyze is the personnel tempo facing soldiers and units today. Comparing the number of deployments today with the number of deployments over the past thirty years is useful in determining how the personnel tempo has increased. The human factors surrounding this tempo are far reaching when one compares the ability to train, the number of deployments and the quality of life issues that undermine the readiness of a deployed Army.

Reasons for Change, Organizational and Army Perspective

Throughout military history, change has remained the only constant. Due to technology, roles, missions, or the political situation, the military is in a constant state of change. Many scholars have studied change and found parochialism the greatest barrier to change. Parochialism remains today the greatest obstacle to change. There are many books and articles that study organizational change. Reviewing this literature has proved insightful. Many of the literary works not only describe the change from a historical perspective but they describe the process and the political background for the change.

Aviation Restructure Initiative

In 1993 the U.S. Army Aviation Branch approved the Aviation Restructure Initiative (ARI). The importance of articles relating to ARI lies in the fact that Aviation Branch units were structured similarly to AMEDD aeromedical evacuation units prior to ARI. The literature not only details why Aviation Branch restructured, but this initiative also provides a possible solution for AMEDD structure as it might be able to emulate a possible structure solution that has been tested over the last seven years. Literary works relating to ARI are somewhat limited; however, the lack of literature in itself may be telling in that there has been very little negative publicity about the initiative. Additionally, the TOEs for aviation units are readily available over the Internet and provide detailed structure information to compare the current Aviation Branch structure to proposed AMEDD structure solutions.

Force Management

Force management in the United States Army today encompasses the entire spectrum of force development and change in the Army from determining the

requirements and training soldiers, to developing new units and technology, to deactivating units and separating soldiers. The Army and the AMEDD both have directorates that are charged with studying the current structure and determining the requirements for the future in anticipation or reaction to change. The literature produced by these organizations provides the basis for designing new organizations. It is useful to analyze their products from the perspective of methodology to the tables of organization and equipment (TOEs) they design.

Conclusion

Although restructuring the Medical Evacuation Battalion is not widely researched, there is ample material available to draw objective conclusions to the question of whether the AMEDD should restructure the Medical Evacuation Battalion. The empirical data drawn from comparing current and proposed TOEs provides irrefutable data on the different structures of organizations. The remainder of the research provides an insight to how the Army is structured and how it changes. Clearly there is a gap in the research in that there is no specific research on restructuring the Medical Evacuation Battalion. Using the historical example of the restructuring of the Aviation Branch in 1993 to ARI, and the experiences of MEDEVAC units during the Vietnam conflict, that gap can be filled. Using all the data available the following analysis can be achieved.

CHAPTER THREE

RESEARCH METHODOLOGY

Research Approach

This research uses a comparative approach in comparing and contrasting the current and proposed medical evacuation battalion structures. Most of the research is centered on attempting to produce numerical analyses of the current and proposed TOEs and the doctrine that might accompany the change. Demonstrating how the different structure solutions deploy, train and interact on a daily basis proves very difficult. Additionally, the author will attempt to apply different force structure models to the historical example of the Vietnam Conflict, to the current missions and deployments faced by the medical evacuation community and to future Force XXI and intermediate brigade combat team concepts.

Researching not only the historical evolution of medical evacuation but also how and why the military changes over time proves very useful in analyzing what if any change is warranted in the medical evacuation community. During both the Korean War and the Vietnam Conflict, Army medical evacuation grew and developed tremendously. Increased technological capabilities and changing mission requirements coupled with technological and structural limitations combined to conceive the current medical evacuation structure. Since their conception, the structure and doctrine have grown; however, has the time come for a paradigm shift in the structure of the medical evacuation battalion?

Specific Materials and Instruments Used

The specific materials and structure models used in researching the question of whether to restructure the Medical Evacuation Battalion revolve around current doctrine and the approved structure that supports that doctrine. Medical FMs describe how the Medical Department plans to support Army doctrine as well as providing a description of the forces required to support the United States Military. The actual unit structure is prescribed in the table of organization and equipment (TOE) that is developed to form a particular unit. Army Regulation (AR) 570-2, *Manpower Requirements Criteria*, now published in electronic form provides the manpower requirements for different organizations. Rather than building an organization with AR 570-2, approved TOEs from the Aviation Branch were used to arrive at a new organizational structure solution for AMEDD evacuation units. During the course of the research, medical FMs, aviation FMs, and TOEs for both AMEDD evacuation units and Aviation Branch units were analyzed to derive a new organizational structure and doctrine for AMEDD evacuation units.

Historical Evacuation Structure

The first task the author faced in determining whether the AMEDD should restructure medical evacuation units in the Army was to research how the AMEDD arrived at the current structure. Throughout history, casualties have been evacuated off the battlefield. Throughout most of the nineteenth and early twentieth centuries, medical evacuation has been archaic due to a lack of emphasis and limited technology to perform the mission. Since the Civil War, evacuation of wounded off the battlefield has grown in its efficiency quicker than the efficiency of prosecuting the modern war. Technological

advances have given way to a new era in evacuation. Air ambulances, evacuation units entrenched in the structure of the standing Army and an emphasis on the care of wounded soldiers have made medical evacuation units one of the first considerations in deploying a force for any mission.

Ground Ambulance Units

Throughout the history of conflict and the U.S. Army, transporting casualties to a location where they can receive definitive medical care has been a concern for the medical department. Some of the first ambulance units were formed during the Revolutionary and Civil Wars; however, it was not until World War I and World War II that the technology for the use of modern ground ambulances was available to the military. Since the Second World War, ground ambulance units of all sizes have been embedded in the structure of the military. For the purposes of this thesis, the ground ambulances that support the corps in the evacuation battalions will be discussed. Today, corps ground ambulance companies are in all components and usually are authorized twenty-four or forty ambulances.

Air Ambulance Units

Air ambulance units have a much shorter history in the United States Army. The first detachments (five aircraft) were employed during the Korean War. The units proved very useful in evacuating patients in the rugged terrain in Korea.¹ Technological limitations limited their ability to carry more than one or two patients per lift; however, they still evacuated thousands of patients from the battlefields. During the Korean War, the detachments were small, had little support structure and were assigned mainly to hospitals and the USFK Surgeon.²

The period between the Korean War and the Vietnam Conflict saw not only technological advances that allowed multiple patients to be transported in a single lift but also the formation of aeromedical evacuation detachments. These detachments still had little logistical structure and relied heavily on other units to provide supply, maintenance and mess services. With the Vietnam Conflict came the employment of the Medical Company, Air Ambulance. The companies generally had twenty-four aircraft and a robust logistical structure to support the units. The companies did not however have a planning staff which often made coordinating missions of subordinate teams difficult as the teams were located throughout Vietnam. Additional concerns were over the maintenance of the aircraft operating at remote locations.

After the Vietnam Conflict, the detachment and company structures remained throughout the 1990s. The number of aircraft in the companies was standardized and all the detachment authorizations were replaced with fifteen aircraft companies. The company TOEs have been modified to current strength of 150 personnel. Although the authorization for the detachments no longer exists, the structure remains with the 68th Medical Company split between Alaska and Hawaii and many of the authorized National Guard companies split to form detachments across the country.

Medical Evacuation Battalions

During the Vietnam Conflict, the AMEDD saw the need to organize a command and control organization for evacuation operations in theater. The companies and detachments, both air and ground, were assigned to medical groups. Air ambulance detachments lacked the organic capabilities to sustain themselves and were reliant on adjacent units for logistical support and basic field services. The air ambulance

companies had the advantage of a greater logistical structure but lacked a planning staff to coordinate operations both laterally and vertically.

The solution to this was the medical evacuation battalion. The battalion was a very large organization with both air and ground evacuation assets. The battalions even combined the personnel of air ambulance companies and detachments to form planning staffs for units below the battalion level. The end result was an evacuation battalion consisting of buses, ground ambulances and air ambulances. The theory proved itself in early 1970 and a second battalion was activated. The battalion structure employed in Vietnam was similar to what might be considered an evacuation regiment when comparing the sixty-one helicopters, eighty-seven ground ambulances and three busses to any aviation unit on active duty today.³ Medical evacuation battalions remain today. A typical medical evacuation battalion in the current Army controls up to sixty air ambulances and eighty ground ambulances.

The Medical Evacuation Battalion

What exactly is a modern medical evacuation battalion? The AMEDD currently organizes its evacuation units into medical evacuation battalions, TOE 08445L000 MED BN, EVACUATION,⁴ (figure 1). These battalions consist of a battalion headquarters embedded in the HHD, air ambulance companies and ground ambulance companies. These units are all separately deployable and rarely stationed on the same Army post. The battalion structure is based combining from three to seven of these separately deployable units into a medical evacuation battalion. A typical battalion consists of a HHD, from two to four air ambulance companies and at least one ground ambulance

company. The mission of the battalion is to coordinate medical evacuation missions within the theater of operations.

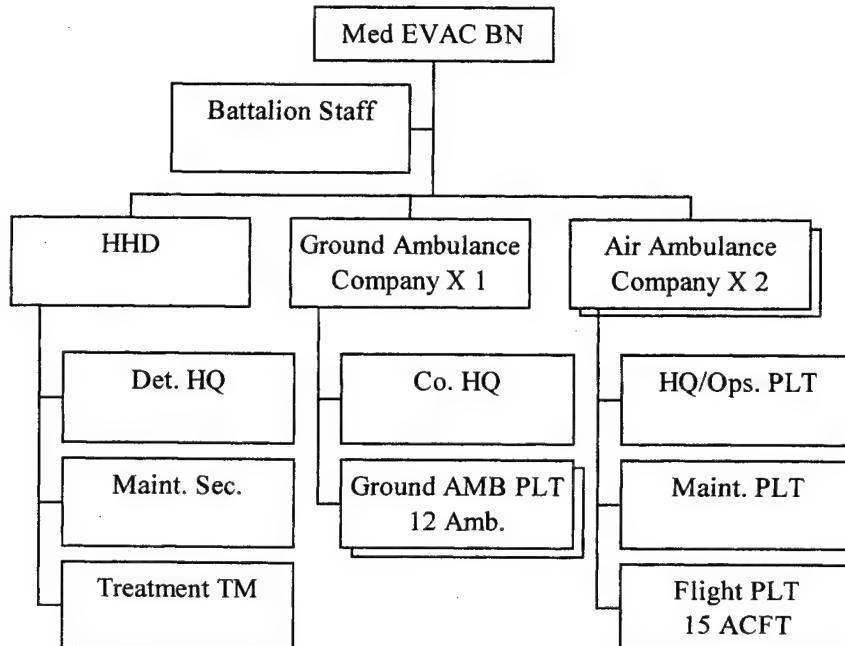


Figure 1. Current Medical Evacuation Battalion

HHD, Medical Evacuation Battalion

The first unit in the medical evacuation battalion is the headquarters and headquarters detachment (TOE 08446L000) (figure 2). The detachment is the nucleus of the current battalion structure. During the Medical Restructure Initiative studies, the Headquarters and Headquarters Detachment (HHD) TOE increased from forty-four to fifty-five personnel. This was an attempt to increase the command and control capabilities of the medical evacuation battalion HQ. The battalion staff section consists of a S1, S2/3, and an S4. Staff officers within the battalion coordinate the personnel, intelligence, operations and logistics for subordinate units operating within the corps

area. The battalion headquarters also has special staff officers that provide technical expertise in the areas of aviation maintenance, aviation standardization, and vehicle maintenance and aviation safety. The last sections in the detachment are the detachment headquarters and the treatment team. The detachment headquarters provides C2 and logistical support for assigned personnel and the treatment teams provide aviation medicine services to assigned aviators and level I CHS for the battalion HHD and collocated subordinate units. The mission of the HHD is to provide C2, staff, and logistical support for subordinate units.

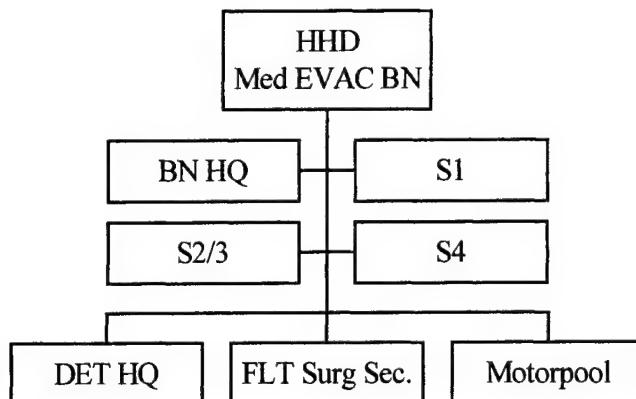


Figure 2. Current HHD, Medical Evacuation Battalion

Air Ambulance Company

Air ambulance companies (figure 3) within the battalion perform the aeromedical evacuation mission. TOE 08447L200 is the current TOE for the medical company air ambulance. Recent MRI changes added additional C2 personnel in an attempt to facilitate split-based operations. This increased the required company strength to 150

according to the current TOE. To complete aeromedical evacuation missions within the theater of operations, the company consists of three platoons and a company HQ section.

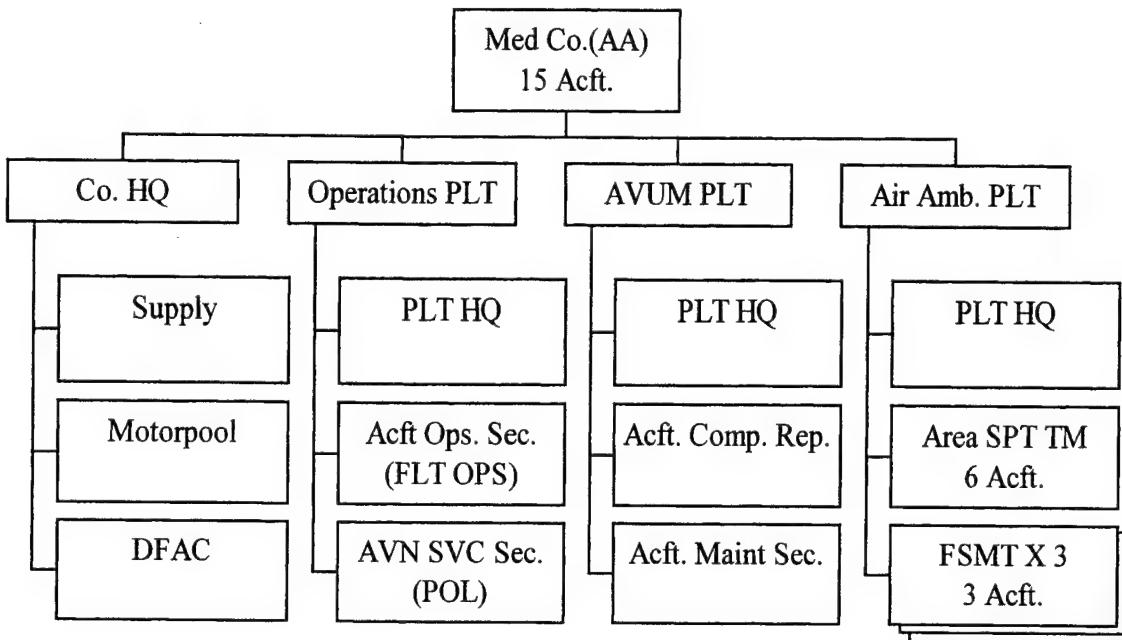


Figure 3. Current Air Ambulance Company

The center of this company is the fifteen UH-60 air ambulances in the flight platoon. The flight platoon is further subdivided into an area support team (six ACFT) and three forward support MEDEVAC teams (FSMT) with three aircraft each. Within the division, each FSMT (three ACFT) will normally support a maneuver brigade and the area support team (six ACFT) will provide area support to the division troops.

To support the flight platoon in conducting DS or GS aeromedical evacuation within the theater of operations and the mission of transporting critical medical personnel and CL VIII supply, the company also has an assigned HQ section, flight operations platoon and an AVUM platoon. The headquarters' responsibility is to command and

control the company and to liaison with supported units and the evacuation battalion headquarters and/or other medical C2 organizations. In addition to the command responsibility, the HQ section contains the dining facility (DFAC), ground maintenance activity (motorpool) and supply functions of the company.

Within the air ambulance company, the flight operations platoon is responsible for fueling the company (CL III operations) and providing C2 for air operations. Since there is not an organic staff to assist the company commander, the flight operations platoon leader acts as the company executive officer and provides the company the second C2 cell during split-based operations.

The last element of the air ambulance company is the aviation unit maintenance (AVUM) platoon. The forty plus personnel in the AVUM platoon conduct all unit-level aviation maintenance for the fifteen aircraft in the company. The platoon has many low-density military occupational specialties (MOSSs) that prohibit true split-based operations.

The medical company, air ambulance is a robust organization with 150 personnel to command, support, and operate fifteen aircraft on the battlefield. Although the company does have a robust structure, split-based operations are problematic, as the company does not have a planning staff to coordinate company operations. The planning staff functions routinely are divided among the officers in the company as additional duties. This makes it difficult to operate at multiple remote locations. Additionally, the logistical functions, supply, motor maintenance, AVUM, DFAC, and communications do not split very well, as there are many low-density MOSSs in these functions.

Ground Ambulance Company

The ground equivalent to the air ambulance company is the medical company, ground ambulance TOE 01415A000 (figure 4). Ground ambulance companies recently underwent an organizational change under MRI. MRI assumed that the air ambulance units would carry more of the patient evacuation load so the TOE decreased from forty to twenty-four M997 ground ambulances.⁵ According to the newest TOE, the company will consist of seventy-five personnel. The company headquarters has a similar mission to the air ambulance HQ as the C2, supply, motorpool and dining facility functions are located in the company headquarters section. In addition to the HQ section, two ground ambulance platoons complete the TOE of the company. These platoons, twelve M997s each, conduct the evacuation mission for the company.

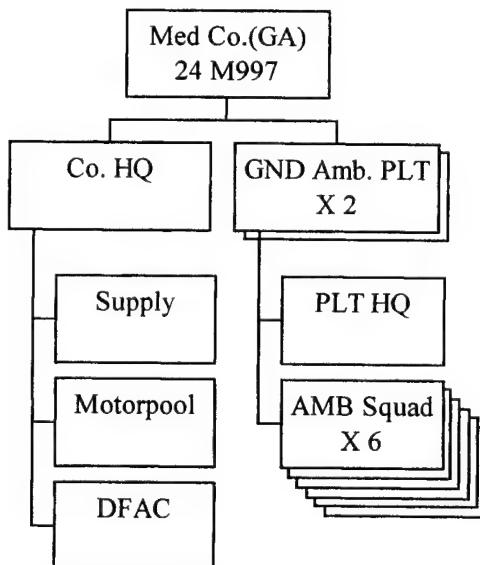


Figure 4. Current Ground Ambulance Company

Both ground and air ambulance companies are individually deployable. They must be assigned to a headquarters, usually the medical evacuation battalion, for command and control. The intent for the companies is to use the company modules and assign them, as required, to the medical evacuation battalion forming a medical evacuation task force. Deploying elements below the company level is problematic, as the C2 and more importantly, the logistical support structure for the companies are not designed to operate at multiple autonomous locations. Although recent ARI changes to the air ambulance company added an additional captain to facilitate split-based operations, deploying small portions of the company becomes problematic during prolonged deployments.

Medical Evacuation Doctrine

The next issue is the doctrine used in fielding and employing the medical evacuation battalion. FM 8-10-6, *Medical Evacuation in a Theater of Operations*, approved final draft dated January 2000 provides the current army doctrine for medical evacuation units. Within the theater of operations, medical evacuation battalions are assigned to medical brigades and usually further assigned to medical groups for C2. The number of battalions that support a theater is based on the number of subordinate units, usually one per three to seven air and/or ground ambulance companies. The basis of allocation for the air ambulance company is one per division (DS), one per two divisions (GS) and 0.333 per separate brigade or ACR and one per theater in support of hospital ships.⁶ The basis of allocation for the ground ambulance company is one per division in direct support (DS) and one per two divisions supported in general support (GS).⁷

Doctrinal Employment of the Medical Evacuation Battalion

Medical evacuation battalions are assigned to the corps. The battalions locate themselves where they can best command the subordinate units. Evacuation battalions must be able to communicate over large distances to coordinate the evacuation effort for the corps. To do this the battalion relies heavily on AM communications. As the battalion operates such a great distance from its' subordinate units, subordinate units must do most of their own operational and logistical planning and coordination.

Doctrinal Employment of Air Ambulance Companies

Normally, air ambulance companies are employed in both DS and GS roles (figure 5). Each division is normally assigned a DS air ambulance company. This company is responsible for evacuating patients within the division area. The company usually employs an FSMT to each BDE. The remaining six DS aircraft in the division area support the division troops. There is also a GS air ambulance company assigned for every two divisions in the corps. The mission of the GS air ambulance company is to evacuate patients from the division area to corps hospitals and to provide area support for corps troops. To evacuate patients from the division, the GS company, assigned to the corps, normally employs one aircraft at each BSA (totaling six aircraft) and one to each DSA (totaling two aircraft). The remaining seven aircraft conduct the area support mission for corps troops.

Figure 5 illustrates the doctrinal employment of the medical evacuation companies assigned to the theater. The fourth company illustrated is the theater air ambulance company in support of hospital ships. The total number of aircraft supporting this one-corps theater is 60. Figure 5 also illustrates the impact of a 75 percent

operational readiness rate on the division. Of the sixty MEDEVAC aircraft assigned to the theater, only forty-five will be available if all the companies meet the 75 percent goal.

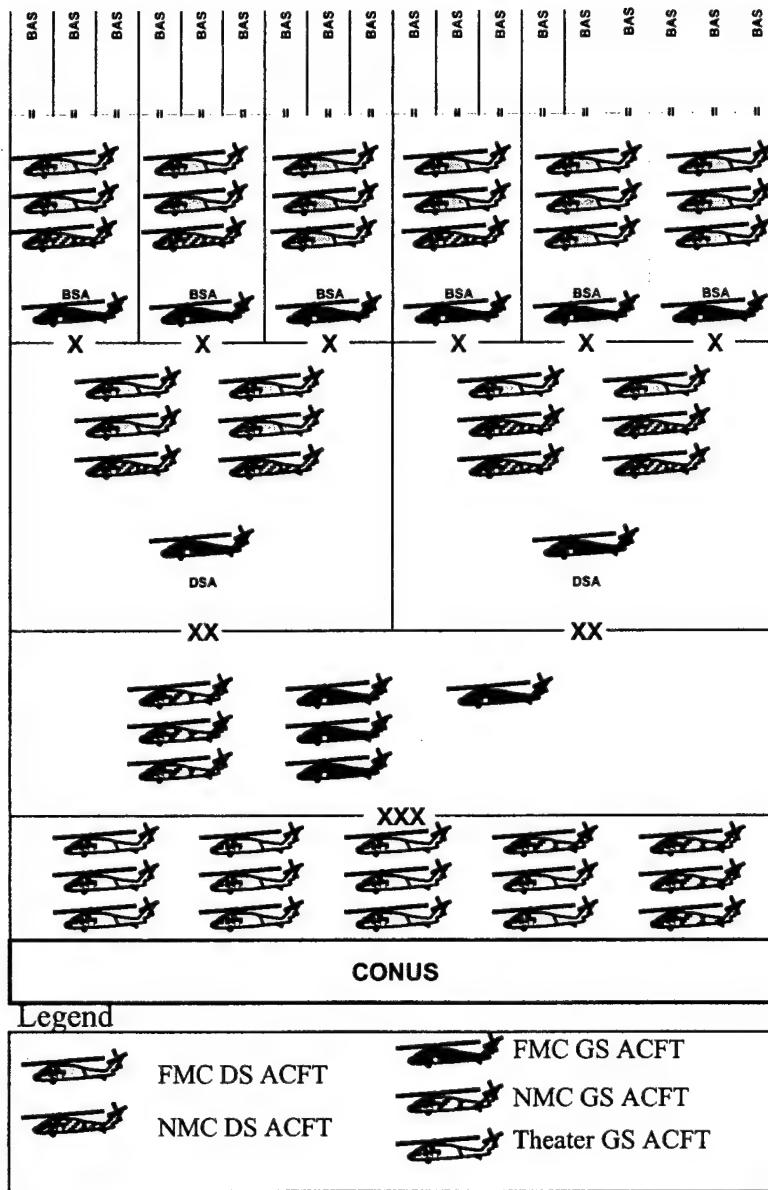


Figure 5. Current Doctrinal Aeromedical Evacuation Support to the Corps

Doctrinal Employment of Ground Ambulance Companies

Ground ambulance companies are employed in DS and GS roles similar to the air ambulance company. One company normally supports each division with forty ambulances (MF2K) or twenty-four ambulances (MRI). These ambulance companies augment the division with ground ambulances and evacuate patients out of the division area to corps hospitals. An additional GS ground ambulance company is assigned per two divisions to provide evacuation support for corps hospitals and to transport patients to MASFs for evacuation out of theater. Using figure three, the corps would require 120 ground ambulances (MF2K) or 72 ground ambulances (MRI).

Doctrinal Force Structure

Doctrinal Number of Units

After determining the composition of a medical evacuation battalion and the doctrine surrounding both the battalion and its subordinate units, the researcher used this information to determine what the doctrinal force structure should be. Since the quantity of AMEDD evacuation units is based on the number of divisions, corps and theaters the AMEDD must support, the next issue was the warfighting force structure (table 3).

Determining the number of combat units the Army fielded to fight the next war and to complete peacetime missions gave the researcher the number of evacuation units required to support the force. The result was that the active and reserve component evacuation units would have to support eighteen divisions, sixteen separate brigades and four ACRs.

Table 3. Total Warfighting Force Structure

Component	Divisions	Separate BDE	ACR
Active Component (COMPO 1)	10		3
Reserve Component (COMPO 2/3)	8	16	1
Total	18	16	4⁸

The next issue is to determine how AMEDD doctrine applies to the warfighting force structure. In order to determine the doctrinal force structure, the author then looked at future Army plans. According to Joint Vision 2010, the military must be designed to fight two nearly simultaneous major theaters of war (MTW). The author then had to make the following assumptions:

1. Three separate brigades equals one division.
2. Three divisions would equal one corps.
3. Each medical evacuation battalion could support two divisions.
4. Two additional medical evacuation battalion per theater would be required.
5. The force structure must support two nearly simultaneous MTWs.

The author then applied the AMEDD doctrine to the warfighting force structure and the assumptions made and determined that the current doctrinal evacuation force structure was thirty-nine air ambulance companies, thirty-seven ground ambulance companies and seventeen medical evacuation battalion headquarters. Table 4 shows the computations for the required number of evacuation units to support the current warfighting force structure.

Table 4. Doctrinal Number of Units

Medical Companies Air Ambulance			
	1 per DIV	18	
	0.333 per sep. BDE	7	
	1 per two DIV	12	
	1 per theater	2	
	Total	39	
Medical Companies Ground Ambulance			
	1 per DIV	18	
	0.333 per sep. BDE/ACR	7	
	1 per two DIV	12	
	Total	37	
Medical Evacuation Battalions (HHD)			
0.166 x the number of air & ground ambulance companies + 4 (2 theaters)		Total	17

Source: U.S. Department of the Army. FM 8-10-6, *Medical Evacuation in the Theater of Operations*, Approved final draft dated January, 2000, 3-5

Doctrinal Number of Personnel

Analyzing personnel requirements is the last step in determining the doctrinal force structure. The first step in determining the number of personnel was completed in determining the doctrinally required number of units to support the current warfighting force structure. Next, the number of personnel required to fill those units must be determined. Table 5 shows the current TOEs that state personnel and equipment requirements to fill medical evacuation units in the Army today. Current MRI TOEs were used in the calculation. After applying these TOEs to thirty-nine air ambulance companies, thirty-seven ground ambulance companies and seventeen evacuation battalion headquarters, the author arrived at a total requirement of 9,628 personnel to man the evacuation units to doctrinally support the force.

Table 5. Current Tables of Organization and Equipment

TOE	Unit	OFF	WO	ENL	Total	Major Equipment
08445L000	MED BN, EVACUATION	35	58	372	465	NA
08446L000	HHD, MED EVAC BN	12	6	41	59	NA
08447L200	MED CO, AIR AMBL	10	26	114	150	15 UH-60A
08449A000	MED CO, GND AMBL	4	0	71	75	24 M997

Source: U.S. Army Requirements Documentation Directorate. "TOE Detail" [On-line] (U.S. Army Requirements Documentation Directorate). Available at <http://www.usafmsardd.army.mil/toesummarygrade mos.cfm?>; Internet; accessed 12 March 2000

Current Force Structure

The required force structure and the authorized force structures are two very different things. Today there are four active and four reserve component medical evacuation battalions with a combined twenty-seven air and nineteen ground ambulance companies. These units are dispersed between the active Army, the Army Reserves and the National Guard.

Active Component (COMPO 1)

Within the active component, there are 2,431 personnel⁹ authorized to man the four medical evacuation battalions, thirteen air ambulance companies and six ground ambulance companies. This does not include TDA personnel assigned to man TDA air ambulance detachments at Fort Drum, New York; Fort Rucker, Alabama; and Fort Irwin, California. These units are generally aligned to form medical evacuation battalions during peacetime. The air and ground ambulance companies that are stationed with the medical evacuation battalion headquarters are assigned to the battalions. The remainder

of the companies have a mixture of command relationships with their parent wartime headquarters. Some of the geographically removed units have a training relationship with the evacuation battalion where their METL and training schedules are approved by the evacuation battalion. Other companies have no relationship at all with the medical evacuation battalion headquarters. In all cases where the subordinate companies are remotely located, administrative and logistical support from the post is required for the unit to function.

National Guard (COMPO 2)

In the late 1990s, nearly all Reserve Component Army aviation assets were transferred to the Army National Guard. The same holds true for aeromedical evacuation units. There are fourteen National Guard air ambulance companies. To complete the evacuation assets in the National Guard, there are six additional ground ambulance companies and two medical evacuation battalion headquarters. The total number of authorized medical evacuation personnel in the Army National Guard is 2,855.¹⁰ The fourteen authorized air ambulance companies are further subdivided among twenty-eight companies and detachments stationed in as many states.¹¹

National Guard units belong to the states under the direct command and control of The Adjutant General of each state. Until federalized, the U.S. Army does not control the training and employment of the units. Due to this fact, the total authorized strength of the units in accordance with the total Army force structure will be used. The stationing of units will be a consideration since states will not wish to give up aeromedical evacuation units even if they were to be replaced with other aviation assets that were restationed.

Army Reserves (COMPO 3)

Although the U.S. Army Reserves make up the majority of the CSS assets in the Army, they are the smallest piece of the evacuation structure. There are currently 802 authorized personnel in the Army Reserve committed to medical evacuation.¹² These personnel are assigned to two medical evacuation battalion headquarters and seven ground ambulance companies.

COMPO 1-3 Summary

Within COMPOs 1-3, there are 6,196 evacuation personnel assigned to eight medical evacuation battalions, twenty-seven air ambulance companies, and 19 ground ambulance companies. The AMEDD loosely aligns many of the reserve component air and ground ambulance companies using a War Trace concept. War Trace is simply the alignment of units (companies) to a battalion as the AMEDD plans to support the force according to war plans. During peacetime operations, active battalion headquarters have little-to-no influence on the reserve component units' training, support and deployments. The battalion is designed to command and control these companies on a regional basis coordinating external support and mission requirements leaving the internal support up to the companies with their own organic support capabilities.

The battalion functions using a regional command and control concept. During peacetime operations, medical evacuation battalions are typically stationed with only one or two of their subordinate companies. Command and control of the remainder of the companies is accomplished via long-distance communication or left to non-evacuation units. Long distances between the battalion headquarters and subordinate companies often create built-in challenges for the command.

For example, the 56th Medical Evacuation Battalion at Fort Bragg, North Carolina, has three AC and three RC units assigned and war traced to it. The 57th Medical Company (AA) is the only assigned company stationed at Fort Bragg. Additional AC air (498th) and ground (690th) ambulance companies are stationed at Fort Benning, Georgia. The remaining three companies are in the National Guard and Reserves and do not train nor deploy under the direction of the battalion. In a conflict situation, the battalion will command and control evacuation units throughout the corps area. Depending on mission requirements, the battalion can be supplemented with additional air and or ground ambulance companies. The battalion mission is to coordinate and supervise all aspects of air and ground evacuation within the corps area. Normally the battalion will support one corps and possibly have the GS mission to support the theater with evacuation to hospital ships.

Evacuation Unit Employment

How are these units employed today? Understandably, one of the greatest challenges facing evacuation today is deployments to support peacekeeping operations. Most of these deployments, due to their limited scale, do not require entire air and ground ambulance companies much less an entire medical evacuation battalion. Thus, companies often deploy ad hoc supplements to support operations leaving the remainder of the company behind with the mission of supporting garrison operations without necessary C2 and logistical capability. Deployments to Bosnia, Kosovo, and disaster relief missions such as Hurricane Mitch relief efforts in 1998 required smaller support packages than supporting combat divisions during war.

The problem becomes what to deploy and how much of a mission can and must the units maintain in garrison. The mission in Bosnia has been continuous since 1996. The requirement for air and ground ambulance units in theater has changed. The requirement for air ambulances has been reduced from an entire air ambulance company to a six-ship detachment. Air and ground evacuation units have rotated through the theater from all components of the Army. The size of the evacuation element has remained between six to nine aircraft and a platoon of ground ambulances. So how do units support this mission? They deploy the majority of their command and support structure to the theater and leave the remainder of the unit at home station to fend for themselves.

This poses a great problem particularly for the air assets. With the command and control assets and experienced crews deployed, the rear detachment must support missions at home station, train new aviators that arrive to the unit and often maintain the majority of the fleet of aircraft. Since the assets are available, they will be tasked by the command to support other ongoing operations.

This seems to be the normal operating procedure today for medical evacuation units. The greatest problem is that the units are structured to support the combat forces in the division and corps area. They are not designed to deploy and still be able to support, maintain and train at home station. The planning staff of the units, accomplished entirely by additional duty appointments, can not deploy and conduct operations at two geographically remote locations. The units lack the depth and experience to safely operate two units often thousands of miles removed from one another.

The Future

Conducting stability and support operations (SASO) is a reality today and a guaranteed mission for the Army of tomorrow. Joint Vision 2010 states that the future armed forces must be deployable and able to respond to a variety of missions. The military must be able to respond to the full spectrum of conflict. For the last decade, medical evacuation units have deployed successfully to support nearly every military operation from Desert Storm to Somalia to Kosovo. As the Army changes, there are two tenants it is using, the Force XXI and Intermediate Brigade Combat Team (IBCT).

The force XXI battlefield is a battlefield where the U.S. Military plans on using information dominance and superior firepower to out maneuver the enemy. The premise is that the Army will be able to employ a superior amount of firepower at the decisive point and time to defeat an enemy. Using this premise, the battlespace for a division increases to more than double the size of an AOE division area. The area of operations (AO) for an AOE division was 10,000 square kilometers compared to a Force XXI division that is envisioned of dominating an AO of 24,000 square kilometers.

In order to keep up with the changes incurred by Force XXI, the AMEDD studied the future doctrine and came up with the Medical Restructure Initiative (MRI). An assumption of MRI and Force XXI was that air would be the primary means of evacuation on the modern battlefield. Accordingly, they decreased the number of ground ambulances in the corps ground ambulance company from forty to twenty-four and added additional C2 personnel to the air ambulance company to facilitate split-based operations. The problem with the Force XXI studies is the assumption that through information dominance, the Army will take so few casualties that the required evacuation structure is

minimal. The composition may need to change. The current structure is strained by the tempo of normal support operations compounded by the deployment tempo. With the increased reliance on air evacuation over much greater distances, the current battalion structure will have a difficult time controlling air evacuation within a corps area of at least 48,000 square kilometers.

Combat developments never cease and the next development will be fielded in 2000 or 2001. The IBCT concept is a lighter, rapidly air deployable force. Where Force XXI centered on the heavy forces, the IBCT seeks to find a light armored vehicle capable of deployment by strategic airlift. The goal of the IBCT is to get an armor-type BDE deployed to a theater in ninety-six hours. Currently, there are no air assets in the IBCT; therefore, no aeromedical evacuation assets will be a part of the IBCT. Despite the fact that no MEDEVAC assets are in the force package, the concept demands air evacuation assets be a part of the deploying force. Since no Level III hospitals will be in theater in the first ninety-six hours, casualties must be evacuated to the airhead to be further evacuated out of theater rapidly. The AMEDD must consider a deployable evacuation package capable of autonomous operations to support this concept.

Aviation Restructure Initiative

In an effort to compare the current AMEDD structure with a structure change that occurred in the Aviation Branch, the researcher analyzed the similarity of the corps aviation units prior to ARI and the current structure of AMEDD evacuation units. Prior to ARI, corps aviation units were structured similarly to the current MEDEVAC companies. Corps aviation companies were companies that had fifteen aircraft, all the logistical support, commanded by a major and plugged into an aviation battalion or group

for C2 on a regional basis. Due to the regional command concept prior to ARI, companies ultimately performed all the staff functions at their level. This redundancy in effort detracted from the primary aviation mission of the companies. During the course of the ARI changes, it was decided that the Aviation Branch would be better suited if they consolidated these companies under a battalion. In doing so the branch could consolidate the logistical and C2 capabilities of the smaller multifunctional companies into a larger, more flexible battalion organization. The battalion staff would be better suited to collectively support the units by combining the logistical assets of the separate companies into an HHC and AVUM companies. The increased C2 structure could be offset by the combined decrease in required logistical personnel. It was determined that by combining these companies (fifteen aircraft each) into a battalion that the required number of support personnel decreased. The additional C2 and logistical capability gave the commanders the flexibility to train, deploy, and command better than was previously afforded.

As a result of the 1993 Aviation Restructure Initiative, one of the units that was fielded was the Command Aviation Battalion (Corps), TOE 01415A000. This battalion consists of a headquarters and headquarters company (HHC), three command aviation companies and an AVUM company. The first company in the command Aviation Battalion (Corps) is the HHC. The HHC makes up the bulk of the battalion. 120 of the 268 personnel in the battalion are in this company. All C2, staff and logistical capabilities reside in HHC except aviation maintenance. The next company is the command aviation company. The mission of the command aviation company (thirty-five personnel) is purely conducting flight operations and missions. The company

commander receives his missions and C2 from the staff, organizational aircraft maintenance support from the AVUM company, his logistics from HHC, and his job is to complete the aviation mission.

Table 6. Aviation Tables of Organization and Equipment

TOE	Unit	OFF	WO	ENL	Total	Major Equipment
01415A000	COMMAND AVN BN (CORPS)	24	46	198	268	NA
01416A000	HHC, COMMAND AVN BN (CORPS)	14	5	101	120	NA
01418A000	COMMAND AVN CO (UH-60)	3	13	19	35	8 UH-60A/L
01419A000	AVN UNIT MAINT CO	1	2	40	43	NA

Source: U.S. Army Requirements Documentation Directorate. "TOE Detail" [On-line] (U.S. Army Requirements Documentation Directorate,). Available at http://www.usafmsardd.army.mil/toesummarygrade_mos.cfm?; Internet; accessed 12 March 2000

The last company in the battalion is the AVUM company. The forty-three personnel in the AVUM company have the mission of performing aviation unit maintenance for the aviation companies in the battalion. These three organizations combine to form the Command Aviation Battalion (Corps). Their combined capabilities complete the corps aviation mission. As the companies are not separately deployable, missions are assigned to the battalion where the commander and staff conduct a mission analysis and determine how to best accomplish all assigned missions. The combined expertise within the organization allows the battalion to operate many complex missions for the corps commander.

ARI Medical Evacuation Battalion

To compare the current AMEDD structure to a proposed structure modeled after ARI, the researcher constructed a new medical evacuation battalion. Using the Command Aviation Battalion (Corps), TOE 01415A000, he constructed the Medical Evacuation Battalion (ARI Model) (figure 6). Based on the TOE dated 1996; the structure models units that were developed during the Aviation Restructure Initiative of 1993.¹³ When applied to the current AMEDD evacuation force structure, a Medical Evacuation Battalion could be formed from existing Headquarters and Headquarters Detachments and Medical Companies Air and Medical Companies Ground Ambulance.

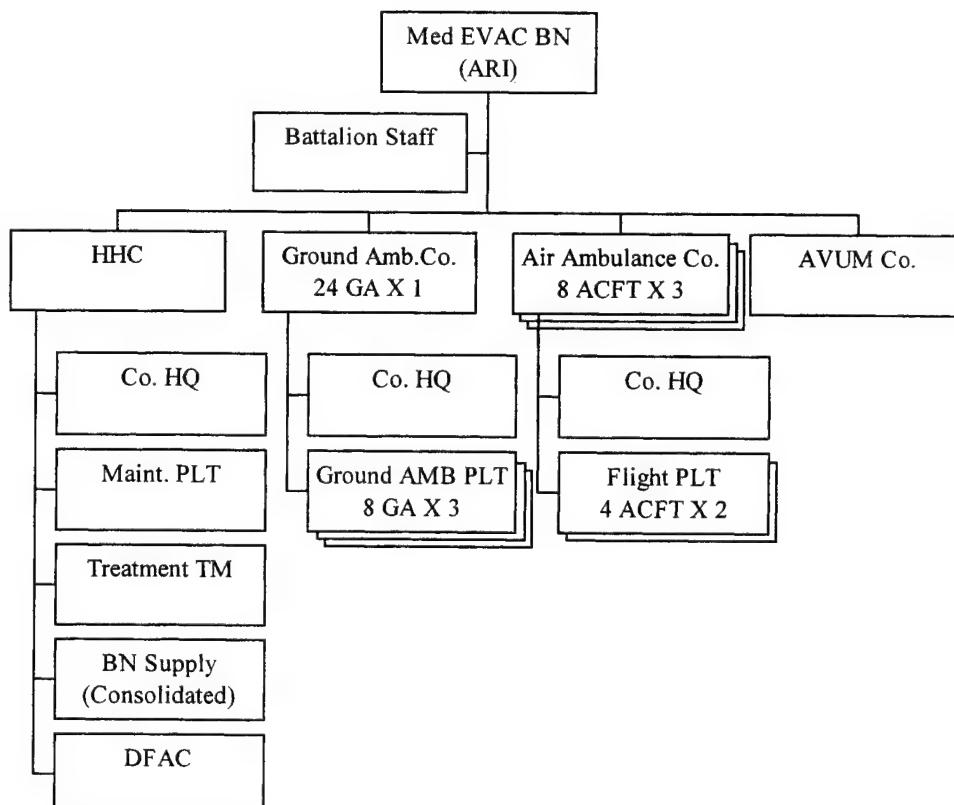


Figure 6. ARI Medical Evacuation Battalion

Using the ARI structure, the author combined one current HHD medical evacuation battalion, five medical companies ground ambulance and eight medical companies air ambulance to form five Medical Evacuation Battalions (ARI). The principle behind this structure is to form three deployable modules within each ARI battalion. The reason the author chose to use five GA and eight AA companies was to replicate existing numbers of air and ground assets in the inventory and not to create a large financial burden in the equipping of assets for the Army. The author's primary concern was to reorganize current evacuation units into a more efficient structure. The Medical Evacuation Battalion (ARI) mission and capabilities in accordance with FM 8-10-6, Medical Evacuation in a Theater of Operations, would not change drastically; however, the basis of allocation, due to the decrease in the number of air ambulances within the battalion would change. In order to keep a comparable number of evacuation assets in the theater, the basis of allocation used in this thesis for the ARI battalion is: one per division or equivalent unit supported and one per theater in a general support role. The organization of existing companies and battalions would change dramatically since all the ground maintenance and logistics capabilities are pulled from the companies and consolidated in the headquarters and headquarters company (HHC) and in the aviation unit maintenance company (AVUM). This battalion consists of an HHC, three air ambulance companies of eight aircraft each, and a ground ambulance company with twenty-four M997 ground ambulances, and an AVUM company. The battalion could be tailored to accommodate any mission requirements by adding additional air and/or ground ambulance companies or by deploying modules from the battalion in the form of medical evacuation support teams, described later in this chapter.

HHC, Medical Evacuation Battalion (ARI)

Logistical functions, except aviation maintenance, are all carried out by the HHC, Medical Evacuation Battalion (ARI) (figure 7). Supply, ground maintenance, medical, DFAC and POL operations are all consolidated in the HHC. The logistic functions, supervised by the staff, are consolidated to create areas of specialization within the unit. Where in the existing organization, there are from three to seven different motorpool operations conducted within the medical evacuation battalion, in the Medical Evacuation Battalion (ARI) all motorpool operations are consolidated into one motorpool supervised by the Battalion Motor Officer (BMO) and the S4. This principal is emulated in the HHC for all logistical functions for the battalion.

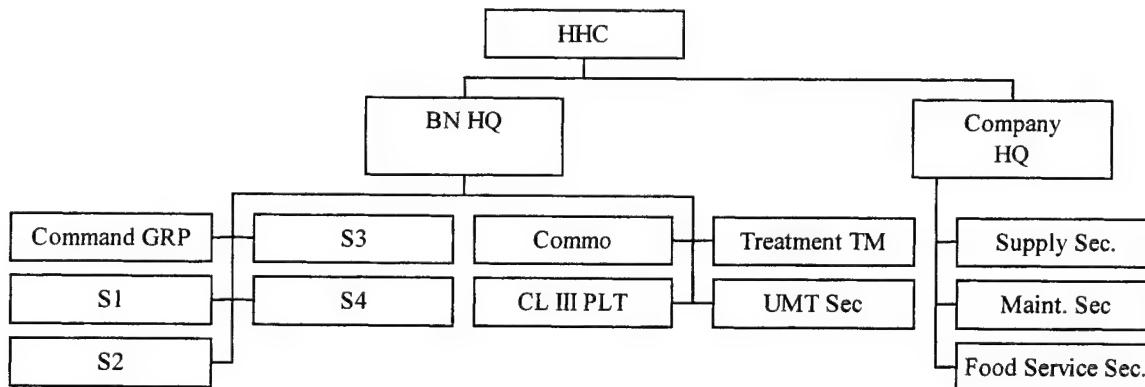


Figure 7. ARI HHC Medical Evacuation Battalion

Air Ambulance Company (ARI)

The next component of the ARI medical evacuation battalion is the Medical Company, Air Ambulance (ARI) (figure 8). Within the Medical Evacuation Battalion (ARI) there would normally be three medical companies, air ambulance (MEDCOAA).

The battalion could be augmented with additional MEDCOAAs to accommodate mission requirements. The mission of the company remains medical evacuation of sick and wounded personnel within the theater of operations; however, rather than fifteen aircraft in each company, the company was reduced to eight aircraft under the command of a captain. The company is no longer a separately deployable unit. The MDCOAA lost all of its logistical capabilities to the HHC and aviation maintenance to the AVUM company. This is in an attempt to use the economies-of-scale in the logistical arena consolidating missions of the companies allowing the companies to specialize in the aeromedical evacuation mission. These changes gave the battalion commander the flexibility to train and deploy a smaller unit with support coming from the HHC and AVUM companies as the mission dictated.

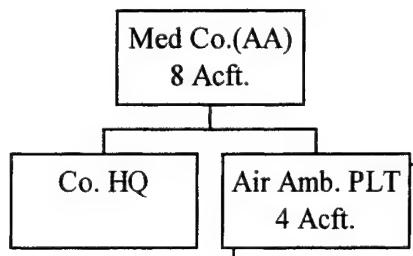


Figure 8. ARI Air Ambulance Company

The companies rely on the battalion headquarters for C2 and coordination for external support and the HHC and AVUM companies for logistical support. Using current tactics, techniques and procedures, each MDCOAA (ARI) would support two brigades in a DS role and the remaining two companies would perform the DS mission for the third maneuver brigade and the DS mission for division troops and nondivisional

units operating in the division area of operations (AO). Additionally, the battalion would pick up the mission of evacuating all casualties out of the division to hospitals in the corps area.

Ground Ambulance Company (ARI)

The last evacuation asset in the medical evacuation battalion (ARI) is the Medical Company, Ground Ambulance (ARI) (figure 9). Structurally similar to the MRI ground ambulance company, the Medical Company Ground Ambulance (ARI) (MDCOGA) also has twenty-four ground ambulances. Command of the company remains a captain. The company maintains its mission of ground evacuation within the theater of operations. Just as the MDCOAA requires support from the BN HQ and HHC, the MDCOGA requires the same support. Current tactics and doctrine apply directly to the MDCOGA (ARI).

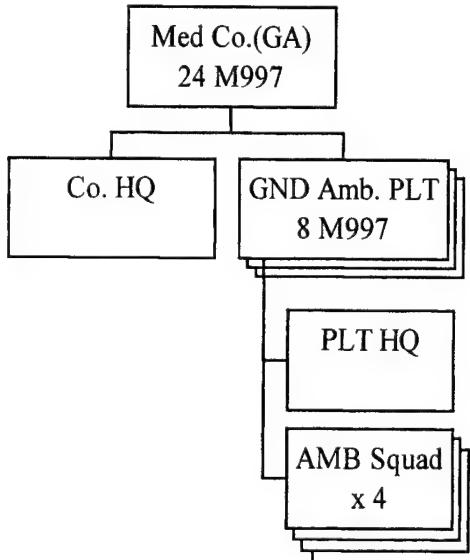


Figure 9. ARI Ground Ambulance Company

AVUM Company (ARI)

The AVUM Company (ARI) (figure 10) is modeled directly after the AVUM company in the Command Aviation Battalion (Corps). The mission and organization are identical to TOE 01419A000. Since the company supports the same amount of aircraft there is no need to change the structure. The AVUM platoons from the current MDCOAAAs combine to form the AVUM company. An MSC captain would command the company and pick up the mission of supporting the aircraft within the battalion.

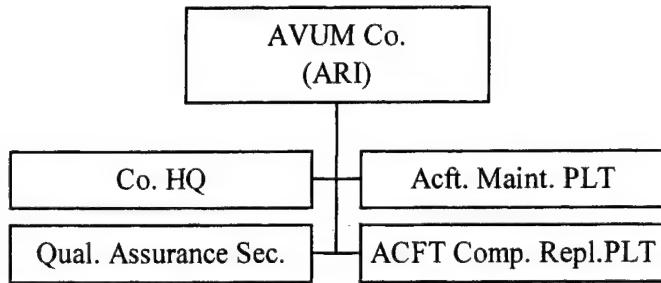


Figure 10. ARI AVUM Company

ARI Battalion Summary

The primary purpose of developing a new medical evacuation battalion is to improve the efficiency of the organization and to improve the support to the warfighting commander. To do this, the battalions are designed in three deployable modules. These modules, or Medical Evacuation Support Teams (MEST) (figure 11), are comprised of teams capable of providing medical evacuation support and C2 for stability and support operations and/or two combat brigades in a rapid deployment sequence. The MEST is comprised of a MDCOAA (ARI), eight UH-60s and thirty-five personnel; MDPLTGA (ARI), eight M997s and eighteen personnel; a C2 section led by a major and seven more

C2 personnel; six POL personnel and three fuel HEMTTs; and eleven personnel from the AVUM company. These deployable modules from the battalion are its backbone.

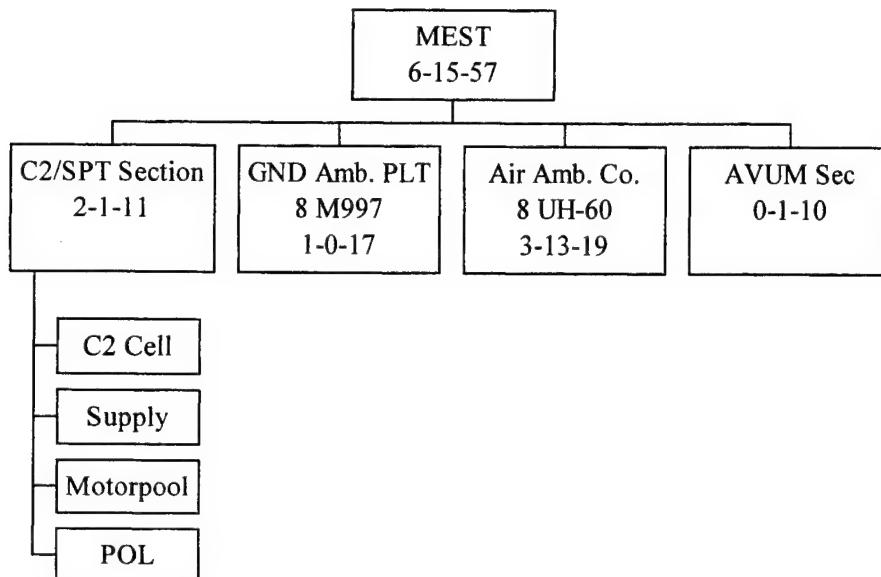


Figure 11. ARI Medical Evacuation Support Team (MEST)

The researcher also explored developing a Medical Evacuation Battalion (Modified ARI Model) based on a nine aircraft company within the medical evacuation battalion. The reasoning behind the modified ARI structure was to keep the current three aircraft per brigade doctrine. This battalion is exactly the same as the ARI battalion except the MDCOAA (Modified ARI) has nine aircraft and forty-five personnel as opposed to the eight aircraft and thirty-five personnel in the ARI air ambulance company. The modified ARI battalion results in a battalion with twenty-seven aircraft as opposed to the ARI battalion that has twenty-four aircraft.

The ARI Battalion

Overall, the reorganization by the Aviation Branch Aviation Restructure Initiative of 1993 has been a great success. Over the past seven years, aviation units have deployed worldwide to successfully support many operations. There has been some backlash from the attack aviation community in that they lost their UH-60 aircraft but overall the consolidation of the logistical support for the units has been largely successful. Additional concerns from Aviation branch are that the staffs and AVUM companies are not large enough. Additionally, the branch is currently exploring multifunctional units but at what level has not been determined. The basis for this move to a multifunctional unit is that rather than task organizing a unit (attack, scout, and utility) every time it deploys, why not have all the capability in one unit. These criticisms of ARI are valid and healthy as an organization grows. Additionally, they provide a greater argument to form a multifunctional medical evacuation battalion.

The Medical Evacuation Battalion (ARI) is modeled after TOE 01415A000. This TOE has been in effect and employed by the Aviation Branch since 1995. Additionally, the battalion is essentially the structure used by the AMEDD in their current force structure so the question is not whether the battalion is the proper structure but whether the battalion should consist of multifunctional independent companies or if a multifunctional battalion should consist of dependant functional companies. The analysis of the battalions' capabilities and limitations is the basis for this research.

One of the greatest obstacles to a conversion of the medical evacuation battalion is the parochialism associated with stationing and ownership of MEDEVAC units today. In order to limit the effects of a major shift in the composition and stationing of medical

evacuation units, the multicomponent concept could be utilized. Under this concept, battalions could be formed that have both active and reserve component companies depending on the units' support relationship to the Department of the Army Master Priority List (DAMPL) and authorized level of organization (ALO). The DAMPL determines which units receive funding and support based on their likelihood of deployment. Medical evacuation units tasked with supporting units high on the DAMPL should be all active duty, ALO 1 units. Evacuation organizations that support units low on the DAMPL could use the multicomponent concept. Under this concept, one of two approaches could be used. The first approach is to use the organization of the three MESTs embedded in the ARI evacuation battalion structure and field any combination of three active component (AC) or reserve component (RC) MESTs under the same either AC or RC battalion flag. The second approach is to form AC or RC battalions with a combination of pure AC and RC companies under the battalion flag. This is the preferred method as pure AC or RC units under one battalion could train and deploy together. This concept is exactly what is used today in the AMEDD with their War Traced companies. The difference is how the individual companies fit into the battalion and where they receive their support. Additional validation or invalidation of the ARI battalion structure is the basis for the analysis in chapter four of this thesis.

Doctrinal Implications of the ARI Medical Evacuation Battalion

In order to employ a different medical evacuation structure on the battlefield, the author explored the doctrinal implications of fielding a different organizational structure in support of the warfighting forces. During the course of the research, the author determined that the number of evacuation assets, air and ground, need not increase

dramatically. Specializing the companies, transferring the C2 and logistical capabilities to the battalion and increasing the number of assets in the division area however, could increase the efficiency. The greatest doctrinal departure is the current concept of higher units evacuating from lower as it applies to air evacuation. This tenet does not maximize the speed of air evacuation. If a patient is picked up at the battalion aid station and requires Level III medical care, there is no reason for the patient to be evacuated to the FSB or MSB. The advantage of air evacuation can allow the patient to be delivered to a Combat Support Hospital (CSH) in a matter of minutes. Thus, the Medical Evacuation Battalion (ARI) would pick up the mission of transporting all patients out of the division area of operations (AO). To accomplish this mission, each maneuver division would have a DS Medical Evacuation Battalion (ARI). These twenty-four aircraft, three companies, are deployed in the following manner (figure 12). A platoon of four MEDEVAC helicopters supports each brigade rather than a FSMT with three aircraft. This does two things. First, it allows the brigade the additional assets to make up for the mission of transporting outside of the division. The platoon may be augmented if mission requirements dictate. Secondly, three aircraft and crews are required for twenty-four hour operations. The FSMT concept does not take into account a 75 percent operational readiness rate. The twenty-four hour support for a brigade requires four aircraft and crews. To ensure this coverage organic to the unit with the mission to support the brigade, a platoon with four aircraft and crews is desirable. Current MEDEVAC doctrine uses an ASMT to support division and corps troops in the division area. After applying the 75 percent OR rate to the company and supporting the forward brigades with three aircraft, the company is left with only 2.25 aircraft. Current doctrine

uses GS aircraft from the corps air ambulance companies to make up the difference and to evacuate patients out of the division area. To support divisional and corps troops in the division area, the ARI battalion has an uncommitted company, eight aircraft. This company has the divisional mission of covering the corps and division troops in the division AO.

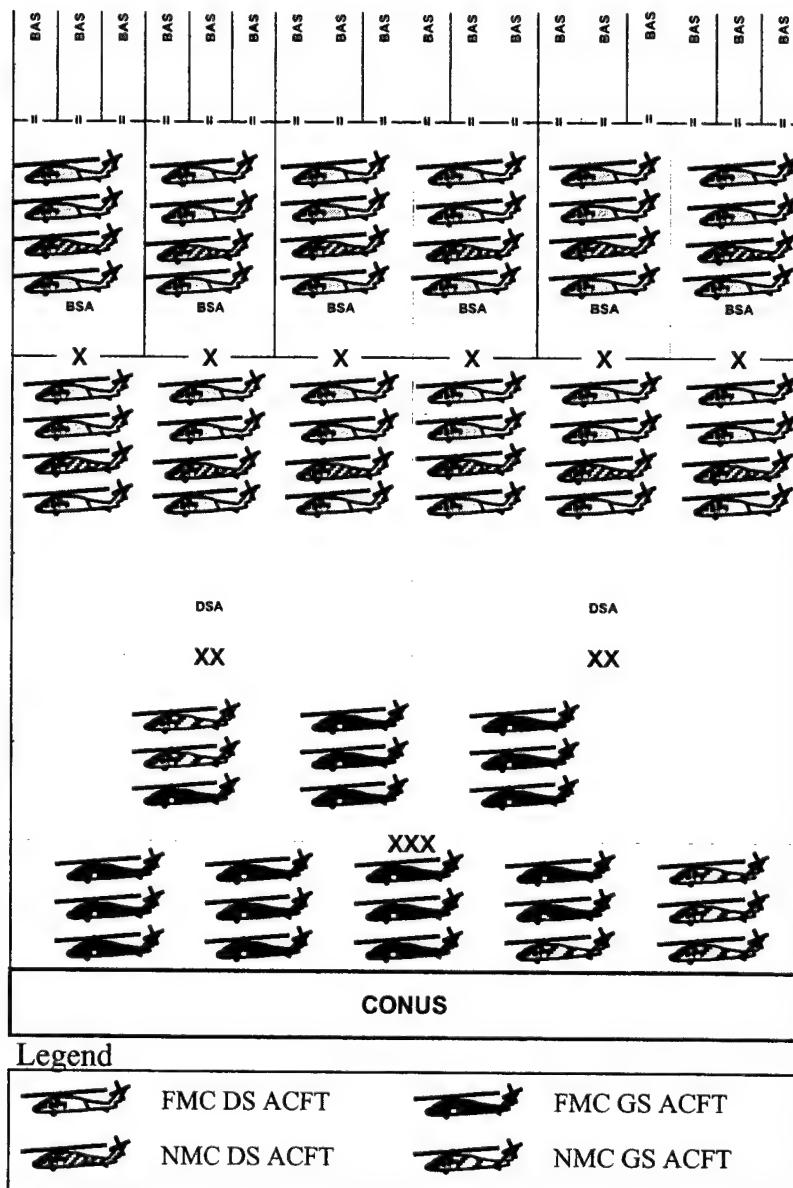


Figure 12. ARI Aeromedical Evacuation Support to the Corps

Evaluation of Change

Throughout history, the military has changed and progressed. How the Army evaluates change and integrates new capabilities is listed in various TRADOC pamphlets and is monitored by the Department of the Army and ultimately the National Command Authority (NCA). When exploring the future and new organizations, the Army uses Future Operational Capabilities (FOC) and Force Integration Functional Areas (FIFA).

Future Operational Capabilities

FOCs are those capabilities that the Army has deemed necessary for the Army of the future. The nineteen that apply to medical evacuation deal mostly with C4I, deployment and sustainment. Command, control, communications, computers and information (C4I) and sustainment are both critical to mission accomplishment on the modern battlefield.

Evaluating C4I in the current medical evacuation battalions proved very difficult, as the battalion system has not been tested since Desert Storm. Inherently, the current battalion has difficulty controlling its subordinate companies. Communications problems operating over an entire corps AO lead to problems as units move on the battlefield. During Desert Storm, evacuation units were stationed throughout the United States Army Central Command's (CENTCOM) AO. The battalions could not maintain reliable communications with the subordinate units.

During Vietnam, which was a very developed theater, the communications network was very elaborate. Normally, air evacuation units could communicate with higher medical units regardless of where they were in theater. Weather and other factors did in fact hamper the communications effort.

What effect would placing a battalion in direct support of a division have on the C4I for the unit? Without any further research, the lines of communication (LOC) would be shortened between the BN HQ and the subordinate companies. The battalion would carry the responsibility of AM communications with higher medical authorities and the companies could focus on the evacuation mission.

In researching the deployment portion of the future operational capabilities, the author researched how the Army deploys their medical evacuation units today. Kosovo, Bosnia, Hurricane Mitch, and other ongoing operations all utilized medical evacuation assets. Comparing how the current and ARI force structures might deploy to similar future operations proves useful in the analysis of this problem.

The last area in the future operational capabilities that concerned the structure of medical evacuation units is sustainment. Researching whether one structure was more effective in sustaining evacuation assets proved difficult. The author explored whether a planning staff and smaller evacuation modules in the ARI battalion were more efficiently supported; however, no conclusions could be drawn from the research. The ability of a unit to deploy and support at multiple locations was thus a primary source for the researcher.

Force Integration Functional Areas (FIFA)

Within the United States Army, force integration/management use the force integration functional areas to determine if a particular force structure is suitable, feasible and acceptable.¹⁴ The nine functional areas listed in chapter one were researched as to how they apply to restructuring the medical evacuation battalion. The nine functional

areas were also used in the decision matrix for evaluating the different force structure models later in this chapter.

Procedures for Collecting/Tabulating Evidence

Most of the data acquired in the research can be categorized into the areas of personnel, equipment and supplies. These figures can easily be compiled and used to compare various force structure solutions and arrive at a conclusion as to which is numerically superior to the other. Thus the structuring, sustaining, equipping and manning portion of the research can be analyzed by comparing the difference between the numbers of units and the personnel and equipment within the units. Deploying and training are a bit subjective in the evaluation of the evidence. The deployability of a unit whether a company or a battalion can be measured in a variety of ways. The researcher chose to evaluate the deployability by determining how well a portion of the unit can be deployed. Unquestionably, all units have an equal ability to deploy their entire unit within the design of the unit itself. A unit that can deploy and function in multiple locations is more advantageous than a unit that loses some or all of its capability during split-based operations. Although the deployability of a unit is subjective, some value can be obtained by analyzing the factors that impact on deployability. Training is another subjective area. In order to evaluate the capability of different units to train, one must first understand the context within which the unit operates and then determine if one unit structure better facilitates training. In this case the author attempted to show how not only the tempo of operations affected the ability to train but also how the level of specialization of the unit affects the ability to train. Funding and readiness are similar to the training and deployment of units in that there must be some level of subjectivity to the

conclusions that can be drawn from them. In this case, there are some historical examples of which type of force structure has been the most efficient specifically during the Vietnam Conflict. Lastly, the researcher explored the OPTEMPO of units. This also is somewhat subjective. The researcher decided that in determining the OPTEMPO of a unit he would determine the support requirements of a unit by crews and divide this by the average number of crews available and determine a training availability rate for all the units.

Criteria for Evaluating Evidence

Force Integration Functional Areas (FIFA)

Within the United States Army there are nine areas in which all future organizations must be measured:

1. Structure
2. Equipping
3. Training
4. Manning
5. Sustaining
6. Deploying
7. Stationing
8. Funding
9. Readiness

These nine areas are the Force Integration Functional Areas or FIFAs.¹⁵

Within the armed forces of the United States, change has not come easily. Arguably, periods of war have historically caused the greatest change in the military.

When change does occur, the basis for this change generally revolves around improvements in the mobility, deployability, communications, sustainability, affordability and simplicity of the organization. To evaluate these possible improvements in the organization of the medical evacuation battalion, the researcher used the U.S. Army force integration functional areas (FIFA). FIFAs used by the Army encompass all personnel, unit and equipment evolution throughout their functional life for the Army. The force integration functional areas consist of nine components: structuring, equipping, training, manning, deploying, sustaining, stationing, funding, and readiness. Although all components of the model are valuable in determining the viability of any organizational change within the Army, the author chose a subset from the model to evaluate the possible organizational change.

Structuring is defined as how a unit is set up organizationally to complete its wartime mission. Simplicity and flexibility are the biggest criteria within the structuring portion of FIFA. Sustaining a unit is critical to the functioning of a unit. This involves all supplies and the ability of a unit to repair its equipment. Sustaining a unit is a crucial aspect of mission accomplishment. The next FIFA is equipping units. Equipping units can be evaluated by comparing the total number of end items and determining how well the equipment is utilized in the conduct of the mission.

Deploying, training and stationing are the next three FIFAs. These three criteria are somewhat subjective. Deploying and training are closely related. Deploying trained units and personnel is the primary focus of a peacetime army. In an effort to evaluate this capability, the author defined the deployability of a unit as the ability to deploy to multiple locations and or train while portions of the units are deployed. Additionally, the

ability to train will be evaluated by the units ability to meet the training goals established in FM 25-101, *Battle Focused Training*. The next component in the evaluation using the FIFA is stationing. As previously mentioned, the parochialism associated with the stationing of medical evacuation assets makes any changes nearly impossible. The author will attempt to demonstrate that a structural change can occur if warranted without completely uprooting every MEDEVAC company in the Army. Closely related to stationing is the manning portion of the FIFA. Manning is the number one concern of the Army that has steadily downsized for the past ten years. Any increase in the end-strength after a structure change would be prohibitive. Additionally, specific MOSs and grade levels are a concern. The author will show the effects of the proposed structure change to manning in the Army. The last two criteria in the FIFA are funding and readiness. In the analysis of the different force structure models, the author will show how funding and readiness are effected.

Decision Matrix

In order to evaluate the different force structure models, the author constructed a decision matrix (table 7) using the FIFAs. The decision matrix is designed to provide an objective measure of which is the best force structure. There are at least three types of decision matrices, a matrix where the advantages and disadvantages are weighed, a broad category matrix and the numerical analysis matrix.¹⁶ A matrix where the advantages and disadvantages are weighed uses text to describe the pros and cons of particular courses of action to make a decision between them. The author did not choose this matrix because of the scope of the categories and the factors involved in each force structure solution. The second decision matrix uses broad categories to compare two courses of action.

Since the categories were fairly specific and there were three courses of action (COA), the author did not choose this matrix. The last, a numerical analysis, uses specific criteria to rank each COA from one to three with one being the best COA.

Table 7. Decision Matrix (minimum matrix)

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
Force Integration Functional Areas				
1	Structuring			
2	Sustaining			
3	Equipping			
4	Deploying			
5	Training			
6	Stationing			
7	Manning			
8	Funding			
9	Readiness			
	Total			

Across the top of the matrix are the three medical evacuation battalion models. The current structure with regionally commanded air and ground ambulance companies, the ARI structure, similar to the command aviation battalion (CORPS), with companies collocated with the battalion headquarters. The ARI structured air ambulance companies have eight aircraft and the ground ambulance companies have twenty-four ground ambulances. The last unit structure evaluated in the matrix was the modified ARI structure in which the air ambulance companies had nine aircraft each. This structure was not feasible. There were not enough air ambulances in all components to field the necessary number of battalions.

The left side of the matrix lists the nine FIFAs. The decision matrix is a minimum matrix. Whichever structure receives the least number of points is conceivably the best structure. The units are thus ranked from one to three with one being the best. Thus each category is awarded a total of six points between the three structures. If there is a tie then the remaining points will be divided between the units. For example, if all three units were to tie in one of the FIFAs then each unit would receive two points for a total of six points awarded for the FIFA. This ensures that no FIFA area receives more weight than any other FIFA criteria. The last step is to total all the points for each structure solution. The solution with the least total points is the best unit structure according to the FIFA criteria.

¹ Colonel Allen D. Smith, "Medical Air Evacuation in Korea and Its Influence on the Future." *The Military Surgeon*, 110, no. 5 (May 1952): 323.

² Charles Williams, "Operations of the 1st Helicopter Ambulance Company," *American Helicopter*, (November 1953): 8.

³ Dorland and Nanney, 100.

⁴ U.S. Army Requirements Documentation Directorate. "TOE Detail 08445L000 MED BN, EVACUATION." Available from: http://www.usafmsardd.army.mil/toe_summarygrademos.cfm?toenumber=08445L000. accessed 12 March 2000.

⁵ U.S. Army Requirements Documentation Directorate. "TOE Detail 08449A000 MED CO, GROUND AMBULANCE." Available from: http://www.usafms_ardd.army.mil/toesummarygrademos.cfm?toenumber=08049A 000. accessed 25 January 2000.

⁶ U.S. Department of the Army. FM 8-10-26. *Employment of the Medical Company (Air Ambulance)*. Washington, DC: USGPO, 16 February 1999: 2-1.

⁷ U.S. Department of the Army. FM 8-10-6. *Medical Evacuation in the Theater of Operations*. Washington, DC: USGPO, Approved Final Draft, January 2000: 3-5.

⁸ U.S. Department of the Army. *Reserve Component Programs*, March 1999
Table 1-1 "Army National Guard and Reserve Contributions to the Army." 9.

⁹ U.S. Department of the Army, DAMO-FDR, Compact Disk. *The Army Modernization Reference Data*, 15 June 1999, Version 2.0 Beta.

¹⁰ Ibid.

¹¹ U.S. Army Medical Department Center and School. "MEDEVAC Unit Listing." U.S. Army Medical Department Center and School, Directorate of MEDEVAC Proponency, Fort Rucker, Alabama: April 1999.

¹² Compact Disk, The Army Modernization Reference Data.

¹³ <http://www.usafmsardd.army.mil> accessed 25 January 2000 at 2002.

¹⁴ U.S. Army Command and General Staff Officer College, Resource Planning and Force Management, Lesson 16. Course C400, academic year 2000: slide C400L 16-7.

¹⁵ U.S. Army Command and General Staff Officer College, Resource Planning and Force Management, Lesson 16. Course C400, academic year 2000: slide C400L 16-8.

¹⁶ U.S. Department of the Army. FM 101-5, *Staff Organization and Operations*. (Washington, DC: USGPO, 31 May 1997), 5-24 to 5-26.

CHAPTER FOUR

ANALYSIS

How should the Army Medical Department (AMEDD) restructure the Medical Evacuation Battalion?

Outcome of Research

Structuring

Which structure is the most flexible?

Table 8. Structuring

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
	Structuring	3	1	2

Structuring was the first of the evaluation criteria. The current structure evolved in the 1950s and 1960s with the technological advances in helicopters and their utility as a medical evacuation platform. During the Vietnam Conflict, the AMEDD experimented with the evacuation battalion concept. At the peak of the conflict 1968-1970, medical evacuation battalions were formed. The battalions were a different organization than the battalions today. The battalions used subordinate companies, twenty-four aircraft each, combined them with detachments to form small evacuation task forces. They did this to consolidate the aviation expertise within the units as experience was dwindling toward the end of the conflict. Additionally, one of the greatest difficulties with the twenty-four ship company was that there was no staff. Thus by combining the company with one or

two detachments a staff could be formed. Indirectly, the Vietnam era evacuation battalion became an evacuation brigade with subordinate evacuation battalions. The same disadvantages in structure remain today. Companies are charged with all the duties of a staff without the personnel or expertise to accomplish the mission. During peacetime, units get by without a staff because the unit is collocated. The company merely forms a staff by assigning additional duties (supply, maintenance, training, and administration) to the officers within the company. Many of these duties are full-time jobs. Given the geographical dispersion and rigors of supporting a combat operation, the same lieutenant or captain who is charged with the training of the company is also responsible for all aeromedical evacuation support for a combat engaged brigade and his three aircraft. The ARI medical evacuation battalion places a battalion staff up in the division area in a DS mission. The modified ARI structure, twenty-seven aircraft, has the same advantages as the ARI battalion except that there are not enough aircraft in the active inventory to form a battalion for each active duty division. Another issue is the twenty-four-hour support for the brigade. Both the current structure and the modified ARI structure discount the 75 percent OR rate for helicopters. In order to guarantee three aircraft and crews will be available to the warfighting brigade commander, four aircraft and crews must be allocated to the brigade. The MEDEVAC commander must commit four aircraft. In the current structure the implication is that there are only 2.25 aircraft remaining to support the division and corps troops operating in the division AO. The modified ARI structure has the available aircraft, there must either be some missions shared between companies or excess aircraft committed to a single mission. In the ARI structure, the battalion can commit a platoon to each brigade and still have an entire

company to conduct the area support mission. Other existential advantages for the ARI battalion structure are ownership, camaraderie and specialization. A company that trains, maintains and deploys together will perform better than a company that is fragmented by deployments and support taskings. The ARI battalion has the ability to implement support, training, and deployment cycles for their air ambulance companies. Given all circumstances from the expertise and staff supervision of the companies to the allocation of resources on the battlefield, the ARI medical evacuation battalion is the best structure solution for the medical evacuation battalion.

Sustaining

Which structure is the most sustainable?

Table 9. Sustaining

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
	Sustaining	3	1.5	1.5

Sustaining the force was the second criteria evaluated by the author. In this case, the ARI and modified ARI battalions tied in their ability to sustain the respective units. Using the Vietnam example again, when the battalions were utilized, the accident rates decreased and aircraft operational readiness rates for the battalions increased by nearly 20 percent.¹ Aircraft operational readiness rates are problematic in MEDEVAC units today as the companies contend with operating the oldest UH-60 in the active fleet and many of the reserve units still operate UH-1s. The ARI battalions have built-in advantages over

the current organizations. First, the battalion can shift missions between companies. If a company is having maintenance problems, the battalion can cease all training for the aircraft in that company and concentrate specifically on maintenance. The current organization does not have that luxury. Companies rarely have sister companies within a supportable distance. These coupled with the fact that there is a continuous support mission, means that a company must simultaneously pull support, train and deploy units for contingencies. Another advantage of the ARI battalion is the AVUM company. The AVUM company is separate from the flight companies. The commander of this organization is totally committed to the maintenance of the aircraft within the battalion without the distraction of the operations and support missions of the battalion. The ARI battalion also has two maintenance test pilots embedded in the TOE of the flight companies. Maintenance test pilots can supervise the operator maintenance performed by the crewchiefs within the companies. An immeasurable advantage of the ARI battalion is also the competition for OR rates between the companies for bragging rights for the best maintenance in the hangar. Another portion of the sustainment of units is providing all classes of supply to the units. Again, the air and ground ambulance companies do not have a staff to provide support for the companies unless they happen to be collocated with the battalion HQ. The ARI and modified ARI battalions have a staff that is collocated with the subordinate units and thus can provide the staff expertise and planning required to sustain subordinate units. Having explored all the factors in sustaining a unit, the ARI and modified ARI battalions equally sustain their subordinate units and both are far superior to the current structure.

Equipping

What is the best structure given the current equipment?

Table 10. Equipping

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
	Equipping	3	1	2

One of the only problems in the ARI structure is the amount of aircraft and ground ambulances required to support the force. This problem is not unique to the proposed force structure. Doctrinally speaking, it takes 39 air ambulance companies totaling 585 aircraft and 33 ground ambulance companies totaling 792 ground ambulances to support the current warfighting force structure both AC and RC using the current doctrine. Given the current trend toward increased reliance on air evacuation, the proposed ARI structure might not be too far off the mark. After applying the proposed ARI structure and doctrine to the current warfighting force structure, the researcher determined that 26 Medical Evacuation Battalions (ARI) would be required with 624 air and 624 ground ambulances to doctrinally support the same warfighting force structure. Since there are only 222 aircraft (UH-1 and UH-60) in the active inventory (COMPO 1) and approximately 294 aircraft of both types in the NG (COMPO 2) neither the current nor the proposed doctrine can be equipped with COMPO 1, 2 and 3 units. The solution is to place some of the units in a COMPO 4 (unresourced), status ensuring that the DS support for the divisions remains in the COMPO 1-3 and if possible all support for the

COMPO 1 divisions remains COMPO 1. This is exactly how the AMEDD supports the force today. The question is can the proposed doctrine and force structure be equipped with current COMPO 1 units.

In the active force there are nineteen air ambulance units (detachments and companies), four ground ambulance companies and four medical evacuation battalions. Adding all the assets in the active component, the researcher came up with 222 aircraft and 96 ground ambulances. Although 18 air ambulances and 144 ground ambulances short of the required number to field the ten COMPO 1 ARI medical Evacuation Battalions, the utilization of the equipment is the key. Using the multicomponent concept, multicomponent battalions could be formed. Combining the active and reserve component aircraft, ground ambulances and HHDs could result in twenty-two multicomponent medical evacuation battalions. With this force structure, what was thirty-seven deployable air ambulance companies/detachments (six to fifteen ACFT) of all components is now sixty-five deployable air ambulance company modules (eight ACFT). Given that the preponderance of the ground ambulances remain in COMPOs 3 and 4, any force structure solution must utilize a similar model for equipping the proposed units. Equipping of units is a difficult proposition for the Army. Determining the proper structure and equipment for a unit is difficult. The author determined that the ARI medical Evacuation Battalion utilized the limited COMPOs 1 to 3 equipment in a far superior manner than the current and modified ARI structure.

Deploying

Which structure is the most deployable?

Table 11. Deploying

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
	Deploying	3	1	2

Deploying a unit and the preparedness for combat of a unit (training) are the two most important attributes of a good unit. Deployments in the Army have increased over 300 percent in the last ten years. Continuing deployments to Bosnia, Kosovo, and Kuwait coupled with a multitude of worldwide support deployments such as hurricane Mitch are draining today's army. The current structure does support all these deployments. The issue is the effect on the remainder of the unit if only a portion of the unit is deployed. The aforementioned deployments all required from four to six aircraft. In accomplishing this mission, most companies have gutted the rear detachment, leaving it with only minimal personnel and equipment. Most of the rear detachments are limited to supporting the installation and then only with contract maintenance augmentation to perform aircraft maintenance. The ARI structure provides for three distinct deployment modules with C2 and support personnel to support each. The battalion would organize into three modules. The modules would be on deployment, training and support cycles. During the deployment cycle, the module (MEST) would be prepared to deploy on a moment's notice. In garrison the MESTs rotate between support, training and deployment cycles. Every battalion would have the capability to rotate their personnel through this type of a cycle. Even if a battalion were to maintain a Kosovo-type mission for multiple years, the battalion would be capable of rotating their personnel. The problem with the modified ARI structure is that there would be fewer companies to rotate

the deployment cycle through. Thus the ARI structure is the most efficient solution when dealing with deploying the different units.

Training

Which structure provides the best training opportunities?

Table 12. Training

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
	Training	3	1	2

The greatest benefit derived by the ARI structure is the ability to train the force. First of all, the companies are specialized. An air or ground ambulance company commander in the ARI battalion is only worried about training his soldiers and conducting operator maintenance on his vehicles. Many units under the current structure get bogged down with the logistical and administrative support for their companies and lose focus on training their soldiers. In the ARI battalion, the battalion staff handles the future operations, the staff and HHC cover the logistical support, and the AVUM company conducts AVUM maintenance. Companies can truly train their soldiers and aviators. Additionally, the aviation companies can rotate between deployment, training and support cycles as mentioned in the deploying paragraph. The ARI battalion provides an excellent opportunity for leaders to train their subordinates, which makes it a far superior force structure solution.

Stationing

Which structure provides the most efficient stationing?

Table 13. Stationing

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
	Stationing	3	1	2

Stationing is the most difficult and subjective criteria to evaluate. The previously mentioned parochialism associated with aviation assets, specifically MEDEVAC, when it comes to moving a NG asset from one state to another is nearly insurmountable. The current structure stations units away from the battalion headquarters. Often, the War Trace HQ does not have any influence over the assigned unit until the unit arrives on the field of battle. ARI structure subordinate units, regardless of component, would be stationed at the same installation as the higher HQ. Although the best solution, the ARI solution may be difficult to implement due to the restationing of units and the costs associated with restationing units.

Manning

What is the best structure given the current manning?

Table 14. Manning

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
	Manning	3	1	2

Manning of the Medical Evacuation Battalion (ARI) is a marked improvement over the current medical evacuation battalion structure. Doctrinally, the proposed structure saves 885 spaces when applying the current and proposed doctrine to the warfighting force structure. Additionally, the level of aviation experience within the units is increased as each company will have an aviation safety, standardization and maintenance technician on the special staff of the battalion. Since the units are collocated, these personnel will be available to resolve any technical difficulties of the companies. In the active component implementation, the numbers are a little bleaker. Since only four ground and twenty-eight air ambulance companies can be fielded the ARI force structure will cost an additional thirty-six personnel in the active component. These faces could easily be transferred into the COMPO 2 or 3 structure. Implementation of the ARI force structure could be accomplished by combining all COMPO 1 to 3 units to form a DS Medical Evacuation Battalion (ARI) for each of the eighteen combat divisions. Of the existing units in COMPO 1 to 3, the ARI force structure saves 152 faces in the total force structure. The ARI battalion is clearly the best solution as far as manning the evacuation assets for the Army.

Funding

Which Structure is the most cost efficient (funding)?

Table 15. Funding

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
	Funding	3	1	2

Funding is a fairly difficult criterion to evaluate. Evaluating the active component units alone, converting to the ARI battalion could produce a one-time savings of twenty million dollars just by combining the eighteen active duty prescribed load list (PLL) for class IX supply into the ten PLLs to support the divisions (average aviation PLL worth approximately \$2.5M). If applied to the total force, these savings could be approximately \$72.5 million dollars if the force could reorganize from forty-seven to eighteen PLLs. Notwithstanding the PLL savings, unit funds, training dollars and every other form of funding would benefit from the economy-of-scale of the larger unit saving millions of dollars each year by converting to the ARI Medical Evacuation Battalion.

Readiness

Which structure provides the best readiness opportunities?

Table 16. Readiness

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
Readiness		3	1	2

Readiness is another criterion that will benefit from the larger organization. The collective expertise coupled with the specialization within the companies will increase the readiness of the companies. In the earlier example of the Vietnam Conflict, readiness rates rose 20 percent after reorganizing to the medical evacuation battalion. A change of this scale could realize similar improvements in the readiness of evacuation units. The

ARI Medical Evacuation Battalion would drastically improve readiness and streamline the reporting procedure.

ARI Battalion Applied to Vietnam

Using the Vietnam conflict as a historical example to demonstrate how the ARI structure could have been implemented, the researcher compared the medical evacuation assets used in Vietnam and a proposed concept of MEDEVAC support using the ARI structure. Since this conflict was not a conventional war, the researcher used the total number of MEDEVAC aircraft in theater during the peak period of the conflict and analyzed how the units were arrayed in theater. Between 1968 and 1969 there were from eight to ten combined MEDEVAC detachments, platoons and companies authorized a total of 114 to 138 aircraft. These units, except for the two MEDEVAC platoons assigned to the 101st Airborne Division (Airmobile) and the 1st Cavalry Division (Airmobile), were assigned to medical groups for command and control. The problems encountered by the units were usually a lack of communications assets to command and control remotely located units and the inability of the centrally located maintenance platoon in the MEDEVAC company to adequately provide maintenance support for twenty-four remotely located aircraft. Additional difficulties encountered by the twenty-four aircraft company were that the commander, without a battalion staff-type organization, did not have the personnel structure to provide a adequate operations planning cell to command and control twenty-four aircraft at multiple locations. The detachment structure allowed for the centrally located detachment headquarters and limited organic maintenance capabilities but was forced to rely heavily on proximate aviation units for maintenance and any unit for feeding and other logistical

considerations. Using present day TOE numbers to make the calculations, the operation required nearly 1500 pilots and support personnel.

Utilizing the ARI Medical Evacuation Battalion and the same mission considerations, the researcher used two enhanced medical evacuation battalions with thirty-two aircraft each (four modules) and one standard ARI Medical Evacuation Battalion. One of the enhanced battalions would have supported I Corps and the other enhanced battalion would have supported III and IV Corps. The standard ARI battalion would have supported II Corps. The total number of aircraft supporting the theater would have been eighty-eight with four aircraft (platoons) at fifteen different locations. Given the modular design of the ARI Medical Evacuation Battalion, C2, POL, and limited maintenance support would have been provided at eleven of the platoon outposts to include the battalion headquarters at three of the eleven platoon outposts. The remaining four platoon support sites could have been supplemented by incorporating four of the eleven MEDEVAC company HQ at the support sites. With fifteen four-aircraft platoons at support locations, seven platoons or three-and-one-half companies throughout the theater remained to provide a rotation to remote outposts and for each battalion to be able to provide an entire company during surge periods or to respond to mass casualty situations. Notwithstanding the fact that the researcher included ground ambulance companies in the ARI calculations, the total number of personnel required using the ARI battalion structure was 939. Even if the researcher added an additional ARI Medical Evacuation battalion (six MEDEVAC platoons), the total including four ground ambulance companies was less than 1200 personnel.

Toward the end of the Vietnam conflict, the U.S. Army Medical Department activated two medical evacuation battalions. In 1970, the 61st and 58th Medical Evacuation Battalions assumed responsibility for air and ground evacuation in theater. The battalions served as an evacuation staff for their subordinate units. The subordinate units included medical detachments (air ambulance), medical companies (air ambulance), medical detachments (ground ambulance) and bus ambulance detachments. In all, the 61st had sixty-one helicopters, eighty-seven three-quarter ton ambulances and three bus ambulances.² The 58th had fifty-five helicopters under its control. Although the units' structure had not changed in that the company and detachment structure remained, the battalions were very successful in increasing the efficiency of the evacuation effort. As Vietnamization began the U.S. Army started the drawdown of forces and by the middle of 1971, both battalions were deactivated and MEDEVAC command and control became the responsibility of the medical groups in theater. This experimentation in the medical evacuation battalion became the basis for current medical evacuation battalion structure.

Summary

Table 17. Completed Decision Matrix (minimum matrix)

		Current Structure	ARI Structure (CMDAB Corps)	Modified ARI Structure
Force Integration Functional Areas				
1	Structuring	3	1	2
2	Sustaining	3	1.5	1.5
3	Equipping	3	1	2
4	Deploying	3	1	2
5	Training	3	1	2
6	Stationing	1	2	3
7	Manning	2	1	3
8	Funding	3	1	2
9	Readiness	3	1.5	1.5
	Total	24	11	19

Using the Force Integration Functional Areas, the author determined that the AMEDD should restructure medical evacuation assets under the Medical Evacuation Battalion ARI concept. After evaluating the evidence, the author was able to complete the decision matrix (table 17) to assist in determining the best structure for the medical evacuation battalion. Of the nine criteria, the ARI structure placed first in six categories, tied for first in two, and placed second in one category. All the evidence indicates that the battalion structure with units assigned locally to the headquarters is the best structure for the battalion.

Although there might be some similarity between current and proposed multi compo battalions in that they both use the concept, the difference is in the stationing. Stationing companies at the same post as the battalion headquarters and allocating a

battalion per division supported are the two greatest distinctions between the two structures.

The intent of the multicomponent battalion in this thesis is to maintain company integrity within the components. This allows for the cohesiveness required in a combat unit. The battalions that must have multicomponent companies will have to split the HHC and AVUM companies between components one to three. The cohesiveness in these battalions can be maintained by stressing the MEST training.

The last anomaly in the research was that there was a discrepancy between the CD on the Force Modernization Reference Data and MEDEVAC Proponency at Fort Rucker. The CD listed much fewer medical evacuation units than Fort Rucker. The research utilized the data from the CD; however, there may be a much greater number of support personnel and evacuation assets if the detachments in COMPO 1 and COMPO 2 are included in the numbers.

Both in the current structure and the proposed structure, the number of authorized units in all COMPOs is less than required by doctrine. This risk is assumed by the military particularly with CSS units. The current structure allows for a multicomponent ARI medical evacuation for each COMPO 1 and 2 division. This support during conflict and peace is greater than the current support for the force. The problem will be restationing units from states that will not get a medical evacuation battalion.

¹ Dorland and Nanney, 101.

² Dorland and Nanney, 100.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Summary

Throughout this thesis, the author has demonstrated that there is a need to restructure the medical evacuation battalion. He has shown how the AMEDD arrived at the current medical evacuation organization and how the organization has not changed much since the Vietnam conflict. Change itself is dynamic in the military. The dynamics of change and how these changes accelerated from the 1950s through the Vietnam Conflict. Historically, conflict has brought change to the military; however, the time is here to reorganize the medical evacuation battalion. Currently medical evacuation assets, active, reserve, and National Guard are stationed throughout the fifty states, Germany and Korea. There are eight medical evacuation battalions with twenty-seven air ambulance companies and nineteen ground ambulance companies. Of these units, 39 percent are in the active component (COMPO 1), 46 percent are in the National Guard (COMPO 2) and 15 percent are in the army reserves (COMPO 3). Today, Army units in all components are deploying to support the entire spectrum of operations. The current definition of success for a unit deployed for peacekeeping operations is that they do not "lose" any soldiers. Thus force protection becomes one of the major concerns of the deploying commander and medical evacuation is one of the force protection measures. Medical evacuation units have deployed on nearly every military operation since the Vietnam Conflict and will continue to deploy.

Although not widely researched, the medical evacuation structure has been tested over time. During the 1950s to 1970s many changes in technology and equipment caused

great changes in medical evacuation tactics and doctrine. Just as this period of conflict caused change in medical evacuation force structure, so should the current changes in military OPTEMPO and doctrine cause a similar change. Medical evacuation structure today supports all current deployments but the strain of constantly deploying units is taking its toll on the force. Retention rates among the force are down, the military is having difficulty recruiting soldiers and the attrition rate for Army captains is at 12 percent. Leaders need to analyze the current structure to determine if there is a better, more deployable structure, that can meet the needs of the Army during peace and conflict and lessen the burdens of deploying on the soldiers and their families. One possible solution is the ARI Medical Evacuation.

Conclusions Based on Chapter Four

Restructuring the medical evacuation battalion is long over due. The training, support, deployability and human issues are greater today than ever before. By restructuring the battalion to form three deployable modules, the evacuation commander will have better trained, motivated soldiers prepared and armed with the resources to succeed on the battlefield. The author evaluated three force structure solutions to determine which is best for the Army and the personnel that serve in those units. Of the criteria evaluated, the current structure was only superior in the stationing of units. Stationing of smaller units is desirable for the civil response mission of the National Guard and since 46 percent of the evacuation assets are in the National Guard the better total solution may be untenable.

Despite the stationing issue, the ARI structure was a far superior force structure solution for medical evacuation units. The consolidation of logistical assets and the

specialization of the companies enabled more efficient and flexible units to be formed. Using fewer personnel and the same number of aircraft and ground ambulances, the Army could field eighteen ARI Medical Evacuation Battalions. These battalions could then form fifty-four MESTs used to deploy in support of worldwide medical evacuation support missions and still provide the NCA with the assets to support the force in the event of war.

Assesses Importance of Outcomes

If the Army were to adopt the ARI Medical Evacuation, the benefits would be felt at every level. Maintenance and readiness rates for MEDEVAC aircraft would increase. The accident rate among MEDEVAC units would decrease. The morale in units would increase. Units would be more deployable. The Army would save money; training readiness of units would increase. Tactical C2 of medical evacuation units would become more efficient. Finally, the Army would doctrinally have more evacuation assets forward on the battlefield where they could save lives. There is nothing more important in the military than providing well-trained, capable units.

Relates Outcomes to Chapter Two

Ironically enough, the lesson of the benefits of the battalion structure was learned and documented during the Vietnam Conflict. Due to the limited duration of conflicts since Vietnam, not many true lessons learned have been documented. The experiences of the Aviation Branch and ARI are the closest example to the change to the ARI Medical Evacuation Battalion. The issue with using ARI as a comparable force structure to the AMEDD is that the Aviation Branch has a much larger population of personnel and aircraft stationed at every division and corps in the Army. The task for the Aviation

Branch was merely reorganizing the assets where they already were, realizing the personnel savings by adding a second crewchiefs to their utility helicopters and changing the grade of the company commander from major to captain which had some personnel implications.

Another interesting aspect of the research is the deployability aspect of the Intermediate Brigade. The Army continues to strive for greater strategic mobility. Unfortunately, the strategic mobility of aviation equipment requires a great deal of lift assets. In order to move the MEST, it would take between four and six C17 aircraft. This is the difficulty in strategic mobility. Although the MEST is the perfect tool to support the Intermediate Brigade and Force XXI where the division nearly doubles its battlespace, a great deal of care must be given in deploying and supporting over such great distances.

Suggests Topics for Further Study

The author evaluated the organizational characteristics of the current and proposed medical evacuation structure. The Army has a program designed to develop organizations that examines the missions, C2, and all the impacts the force. The military should propose the ARI Medical Evacuation Battalion and research whether the unit should be adopted. If the determination were made to adopt the ARI battalion, then the entire TOE development process must be completed. The bottom line is that further exploration of the structure of the medical evacuation battalion is warranted.

The next topic that should be studied is the assignment of medical evacuation units. Due to the specialization and expertise required in both the fields of medicine and in aviation, the aeromedical assets in the Army are constantly torn between the divisional

aviation units for the aviation expertise and the corps medical units for their medical expertise. An argument for the current structure could be made if all DS aeromedical evacuation assets were assigned to the aviation brigade in the division. With the logistical and C2 support of the aviation brigade, the medical evacuation units could more easily deploy and support at multiple locations.

Another area of interest is how much money the army could save by consolidating the fifty-four COMPO one to three units into eighteen multicomponent battalions. Training, unit funds, PLLs both air and ground and many other stationing expenses could be saved by consolidating the units into battalions. This is just the saving in real dollars not to mention the amount of man-hours that would be saved by dividing the number of units and thus administrative requirements by three.

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